

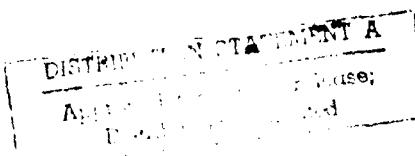
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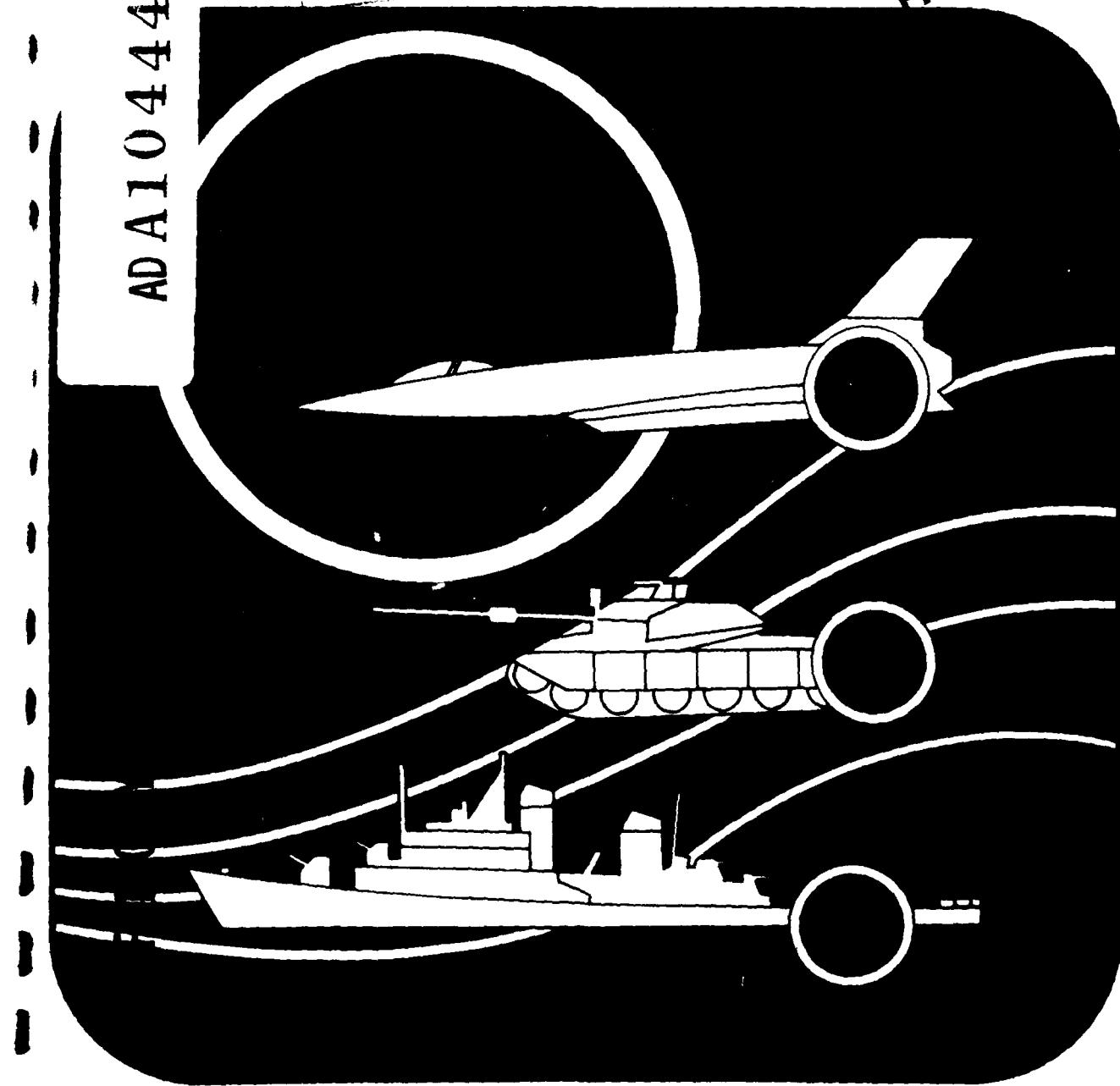
OFFICE OF THE
DEPUTY ASSISTANT SECRETARY OF DEFENSE
(ENERGY, ENVIRONMENT AND SAFETY)

1 JULY 1980

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(6) DEPARTMENT OF DEFENSE
ENERGY MANAGEMENT PLAN

1980

(12) 148

Office of the Deputy Assistant Secretary of Defense,
(Energy, Environment and Safety)
The Pentagon
Washington, D.C. 20301

(11) 1 July 1980

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FOREWORD

We are pleased to present the second annual Defense Energy Management Plan (DEMP). The Department of Defense has made significant strides in improving the management of defense energy resources since the first DEMP was published last year. We have promulgated energy goals and objectives for mobility operations and installation support to the year 2000 and have made milestone accomplishments this past year in energy supply assurance and energy conservation efforts. Most noteworthy successes fall into three broad, but interrelated areas: energy program management; energy supply (assurance and logistics); and energy conservation. The application of energy technology complements and contributes to each of these areas:

In Energy Program Management, we have:

- Issued energy goals and objectives to the year 2000;
- Undertaken a thorough short-term energy information improvement program as well as a longer-term effort to enhance the worldwide defense energy information system with data base management capabilities;
- Completed the second annual energy management review of the energy programs of the military departments and the Defense Logistics Agency;
- Completed the budget review for fiscal years 1981-1985 and successfully obtained additional funding for energy programs;
- Developed the Ten-Year Department of Defense Building Energy Plan; and
- Revitalized the cooperative energy technology program with the Department of Energy through a joint workshop and implementation of the recommendations of the workforce under the aegis of a top level DoD-DOE steering group.

In Energy Supply Assurance, we have:

- Developed with the Department of Energy the necessary regulations to implement provisions of the Defense Production Act to assure Department of Defense petroleum supply during periods of supply disruption;
- Completed the Phase I development of the defense energy emergency management system;
- Initiated actions to obtain domestically secure sources of petroleum from Outer Continental Shelf royalty oil and Naval Petroleum Reserve protection;
- Simplified defense petroleum contracting procedures;

- Initiated quarterly meetings with the Deputy Administrator of the Energy Regulatory Administration to discuss oil allocation issues;
- Published policy to manage more effectively bulk petroleum products, storage, and distribution facilities;
- Undertaken an aggressive gasohol utilization program; and
- Rebuilt Department of Defense petroleum inventories.

In Energy Conservation, we have:

- Reduced energy consumption 6 percent in installations and 12 percent in administrative use of motor gasoline for the 12-month period ending March 31, 1980, as compared to the previous 12-month period;
- Reduced overall energy consumption in FY 1979 7 percent below the FY 1975 energy conservation baseline through energy awareness and education, use of aircraft, ship, and vehicle simulators, retrofit of existing facilities, and better energy management practices;
- Initiated an energy incentives award program, and
- Published regulations to insure that energy is a major consideration in major system acquisitions.

In spite of this tremendous progress, much remains to be done. Our principal objective in the forthcoming year will be to complete the supply assurance initiatives we have undertaken. We will begin in October, 1980, to obtain Outer Continental Shelf crude oil which we will exchange for military petroleum products. We plan to expand our access to government-owned crude oil thereafter as we gain experience and as more crude oil becomes available. In early 1981 we will conduct a politico-military simulation to test Defense Production Act implementation. We will also continue to seek additional contractual improvements.

In addition, we intend to focus significant effort in the next year on implementing the new Defense Energy Information System. This new system will improve the timeliness, accuracy, and usefulness of DoD energy data for evaluation and analytic purposes.

We sincerely hope that after a thorough analysis and study of this plan, we may share your thoughts and recommendations. This plan will be updated early in 1981, and we welcome any comments which you may have.

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I. Executive Summary

A. Introduction

The central purpose of the defense energy management program is to assure that the armed forces of the United States have sufficient energy resources to maintain the training, operational readiness, and the combat capability of the strategic and tactical forces. This includes a broad range of interrelated energy programs which include petroleum supply assurance, energy self-sufficiency, and energy conservation and efficiency.

United States national security objectives can be achieved only if we are thoroughly prepared to meet essential military energy requirements. The continuation of our ability to deter armed conflict, to produce modern weapon systems, to maintain the readiness of our military forces, and to support worldwide commitments on the seas, in the air, and on the ground, depends on energy, most importantly liquid hydrocarbon fuels.

In the Department of Defense, we recognize the singular importance of energy. The military forces depend entirely on mobility fuels to operate aircraft, ships, and ground tactical and administrative equipment throughout the world. Our energy program emphasizes the need to meet mobility and facility energy requirements that are necessary to maintain a high degree of readiness.

Energy contingency planning is fundamental to our nation's continued national security. Our present deficiency of assured energy resources, with which we are faced today, is the single surest threat that the future poses to our security. Defense energy requirements, especially for petroleum mobility fuels, are enormous. In wartime, or periods of mobilization, they will probably increase threefold. In periods of petroleum shortages, we may find ourselves in competition for available fuel with the private sector. Periods of shortages are often periods of high international tensions. This means that in periods of petroleum shortages, we may have to increase the state of readiness--and hence, fuel consumption. Furthermore, during periods of mobilization, defense industry and transportation energy requirements may be equal to or greater than purely military needs.

Defense energy emergency management plans are contained in the Defense Energy Emergency Planning System (DEEMS) document (Appendix A). The purpose of the DEEMS is to assure the availability of fuels to the Department of Defense (DoD) during periods of supply disruptions. Also, in each military service, commanders at all levels are responsible for the development and maintenance of effective command energy programs. This responsibility includes the requirement to develop base level energy emergency plans. The DEEMS is far along in its development phase. We will finalize it when current supply assurance initiatives, which we now have underway, mature enough to be reflected in its final system specification.

Energy and national defense are inextricably intertwined. The mission of the Department of Defense is clearly to be prepared to defend the country successfully against foreign aggression. Combat readiness requires prodigious amounts of energy. The Department of Defense is the largest single user of energy in the nation. We account for nearly 2 percent of the total national energy use and nearly 2.5 percent of United States petroleum demand. In the federal government, we use 80 percent of all federal energy and 90 percent of federal petroleum. Sixty percent of this petroleum is for mobility operations. The critical and essential nature of these petroleum mobility fuels can readily be appreciated. Their use ensures the operational readiness of the armed forces in peacetime, and in wartime the exercise and projection of military power throughout the world.

Assured supplies of energy, particularly mobility fuels, are essential to ensure our national defense. This is true in peacetime, in a time of crisis, or when engaged in hostilities or general war. Meeting this goal has become more difficult as our energy supply becomes less subject to our control and more vulnerable to disruption. Our military capabilities in any event, and in any given part of the world, depend totally on the mobility of our weapons and support systems. As a result, we are increasingly concerned that our reliance on liquid hydrocarbon fuels, for now and in the foreseeable future, is based on the availability of natural crude oil. The challenge of the defense energy management program in the near and mid-term is to assure adequate fuels through supply and conservation initiatives. For the longer term, we need to avail ourselves of more secure, plentiful energy resources through technological advances.

Department of Defense policy is to ensure a supply of energy sufficient to meet essential training requirements in peacetime and sustainability requirements in wartime. Energy conservation is a significant part of our effort to ensure defense energy supply. We realize that the cheapest most immediately available energy is that which we already have, but have avoided expending through increased efficiency and more stringent controls. An equally significant element of defense energy policy is to demonstrate the application and practicality of a wide variety of energy conversion technologies to help reduce the DoD's reliance on scarce fuel sources. Our energy technology initiatives include developing a capability to use synthetic mobility fuels in weapon systems, as well as demonstrating the use of solar, fossil, and geothermal energy sources in fixed facilities.

In summary, we have structured the defense energy program to reflect the realities of the energy situation. The Defense Energy Management Plan (DEMP) is the overall DoD energy management plan. It contains the DoD energy goals and objectives and the narrative and quantitative descriptions of the program elements that are designed to achieve the overall goals and objectives. Defense energy goals and objectives have been developed for mobility operations and installations. Within each of these categories, goals have been established for energy supply and for energy conservation and efficiency. The defense energy management program is designed to achieve national energy goals and objectives which the Congress and the President have mandated, as well as to achieve

greater energy self-sufficiency, reduce energy costs, and ensure the operational readiness of the strategic and tactical forces.

This plan serves several purposes. It covers the interrelated areas of energy supply and energy conservation and efficiency. Assured energy supply will provide the energy required to support mobility operations and installations, and energy conservation and efficiency actions will reduce energy consumption in mobility fuels and utility energy sources that support installations.

This plan is organized to:

- o Relate the defense energy program to the federal energy management program,
- o Describe the defense energy management organization and process,
- o Outline the 1980 defense energy management priorities,
- o Provide an overview of defense energy goals and objective programs for energy supply and conservation,
- o Publish the Defense Energy Emergency Management System, and
- o Provide a directory of defense energy policy documents and principal DoD energy officials.

This plan provides:

- o Preliminary programming guidance to components several months in advance of the formal consolidated guidance,
- o The basis for the Deputy Assistant Secretary of Defense (Energy, Environment and Safety) input to the Secretary of Defense consolidated guidance for component program development for the forthcoming program year,
- o A baseline of information on overall DoD energy goals, progress, and plans, and
- o Compliance with the federal report requirements which the President has established.

B. Defense Energy Management Scope

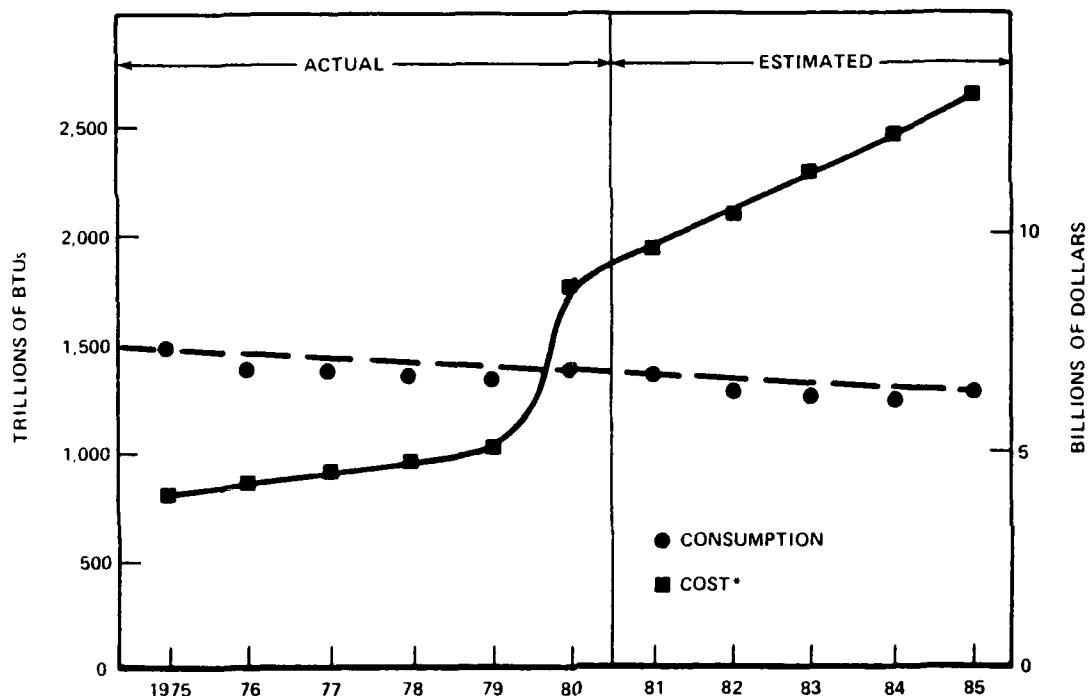
The Defense energy problem is essentially a microcosm of the national energy problem. The DoD relies heavily on petroleum. In fact, petroleum accounts for nearly 70 percent of defense energy consumption. It will continue to become less available, and it will continue to be more expensive. In FY 1979 alone, the DoD used about 247 million barrels of oil

equivalent at a cost of about five billion dollars. Of this energy consumption, 170 million barrels was petroleum products. The other utility energy sources used to support installations include:

- o electricity,
- o natural gas and propane/LPG,
- o coal, and
- o purchased steam and hot water.

Figure I-1 depicts DoD energy consumption and cost for the past six fiscal years and projects consumption and cost for each fiscal year through fiscal year 1985.

DEPARTMENT OF DEFENSE ENERGY CONSUMPTION AND COSTS



*COST ESTIMATES BASED ON PROGRAM OBJECTIVE MEMORANDA FY82-86 ESTIMATES.

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Figure I-1

Figure I-2 shows Department of Defense energy reduction and cost avoidance since 1975. It is estimated that cost avoidance will be

DEPARTMENT OF DEFENSE
ENERGY REDUCTION AND COST GUIDANCE

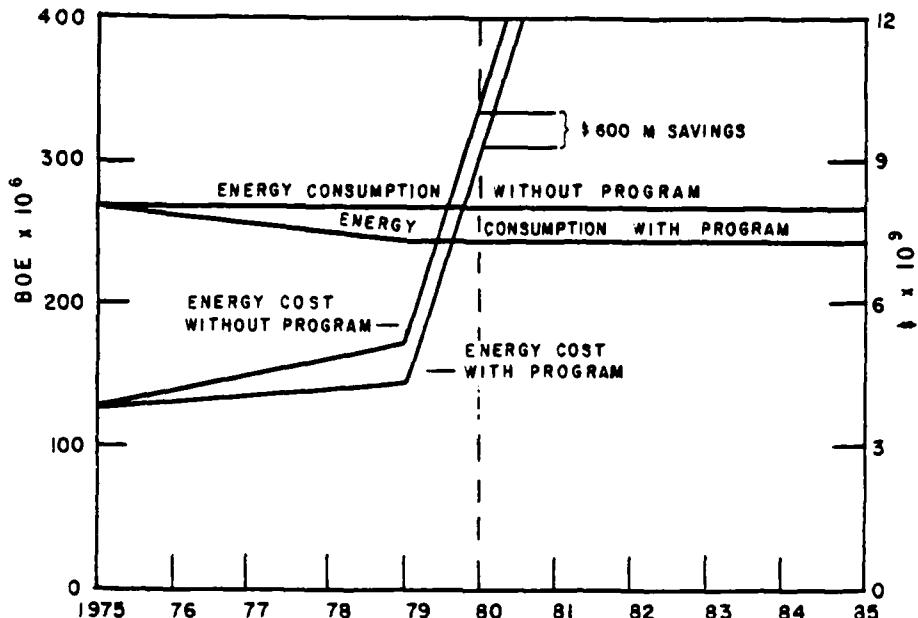


Figure I-2

approximately 600 million dollars in FY 1980 with the current reduction in energy consumption.

C. Relationship to Federal Energy Management

The Defense energy management program is a major element of the overall federal energy management program to reduce the federal government's energy consumption. DoD's leadership in this effort has been clearly demonstrated since the program's inception. Since FY 1975, the baseline year used to measure energy conservation achievements, the DoD at the end of FY 1979 had reduced its consumption about 7 percent. This reduction equates to 18 millions of barrels of oil equivalent. Table I-1 shows the types of fuels and their cost for FY 1979 as well as the percent consumption reduction in each type of fuel over the FY 1975 baseline period. Some of the efforts used to accomplish this reduction included:

- o Energy awareness training and education,
- o Use of simulators (aircraft, ships, and vehicles),
- o Retrofit of existing facilities, and
- o Better energy management practices.

ENERGY COST AND CONSUMPTION BY FUEL TYPE FY1979

FUNCTIONAL CATEGORIES*

FUEL TYPE	GENERAL TRANSPORTATION				MOBILITY FUELS				FACILITY FUELS				TOTAL	CHANGE FROM FUEL CONSUMPTION REPORTED FOR FY75	
	(1) FUEL CONSUMPTION	(2) ** COST OF CONSUMPTION	FUEL CONSUMPTION FY79	CONSUMPTION FY79	FUEL CONSUMPTION FY79	CONSUMPTION FY79									
ELECTRICITY-MWH									25,343,957	\$ 978,272,900	25,343,857	\$ 978,272,900	- 32		
FUEL OIL-GAL (000's)					1,000,413	\$ 542,223,800	1,000,413	\$ 542,223,800	1,000,413	1,000,413	1,000,413	1,000,413	-13%		
NATURAL GAS-CU. FT. (000's)					102,129,096	\$ 246,131,000	102,129,096	\$ 246,131,000	102,129,096	102,129,096	102,129,096	102,129,096	-14%		
LPG OR PROpane-GAL (000's)					26,339	\$ 8,454,800	26,339	\$ 8,454,800	26,339	26,339	26,339	26,339	-27%		
COAL-SHORT TONS					1,734,967	\$ 56,750,800	1,734,967	\$ 56,750,800	1,734,967	1,734,967	1,734,967	1,734,967	-16%		
PURCHASED STEAM-BTU (BILLIONS)					4,016	\$ 19,919,400	4,016	\$ 19,919,400	4,016	4,016	4,016	4,016	+49%		
AUTO GASOLINE-GAL (000's)	116,623	\$93,065,154	116,623	\$ 93,065,154											
DIESEL & PETROLEUM DISTILLATE-GAL (000's)		1,031,805		\$ 556,142,895											
AVIATION GASOLINE-GAL (000's)			31,730	\$ 19,831,250											
JET FUEL-GAL (000's)		4,701,946		\$2,111,173,754											
NAVY SPECIAL-GAL (000's)		68,834		\$ 27,877,770											
OTHER-BTU (BILLIONS)															
TOTAL	116,623	\$93,065,154	5,950,938	\$2,808,090,823											
					587.22***	\$1,751,752,800									

* General transportation is defined as administrative motor vehicle use. Mobility fuels includes all fuels applied to training and operational readiness. Operational readiness is defined as activities related to insuring the capability of a unit, ship, weapon system, or equipment to perform the missions or functions for which it is organized or designed. Operational training is defined as that training that develops, maintains, or improves the operational readiness of individuals or units.

** We believe these costs figures to be somewhat low; they are based on low average energy prices for 1979.
*** This figure reflects trillions of BTUs.

Table I-1

DoD energy consumption in relation to national and all other federal consumption is depicted in Figure I-3. Defense energy consumption, as a percentage of overall federal energy consumption, does not include defense-related industries. The energy consumption level for both DoD and related industry amounts to about 5 percent of overall national energy use. Figures I-4 and I-5 show DoD energy consumption and DoD petroleum for 1979, respectively.

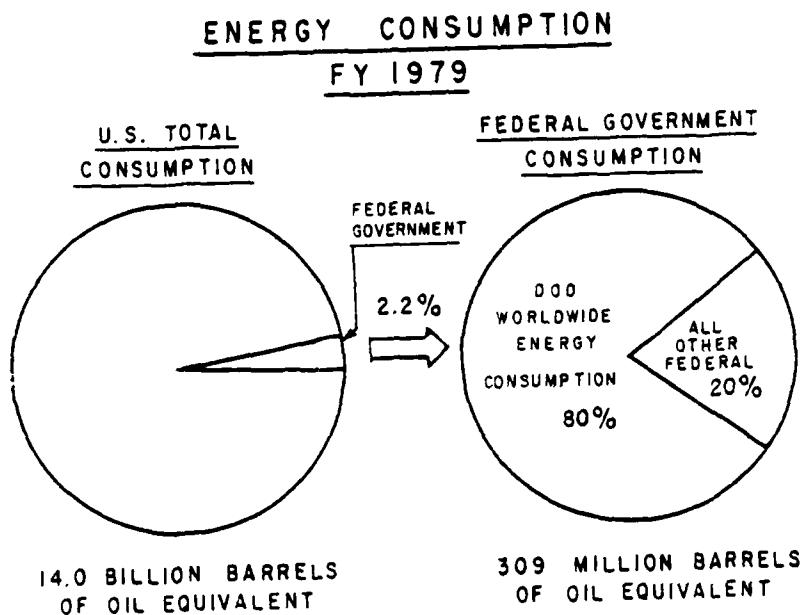


Figure I-3

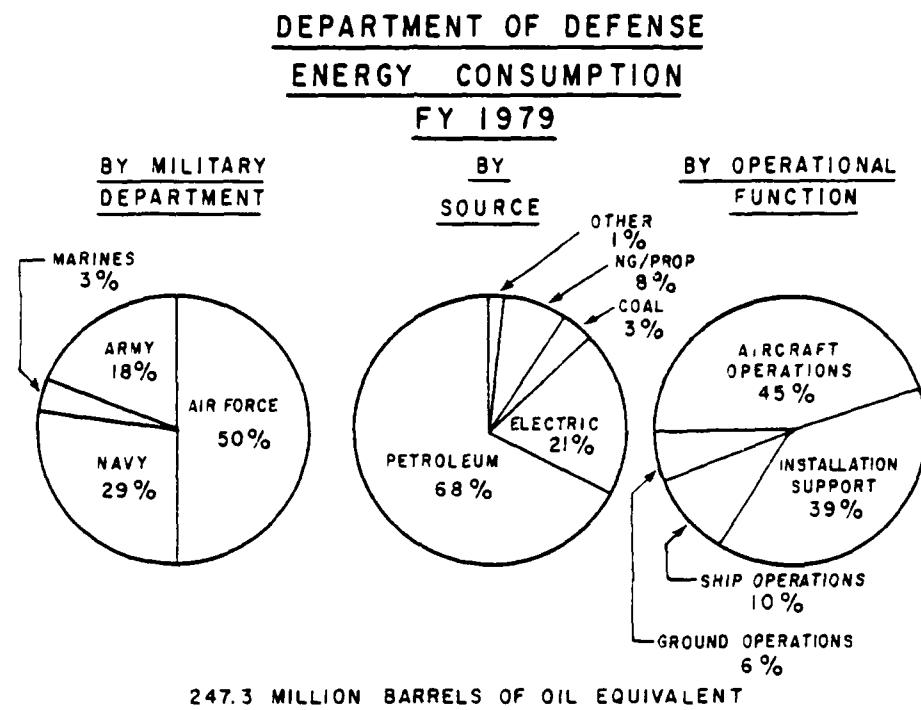


Figure I-4

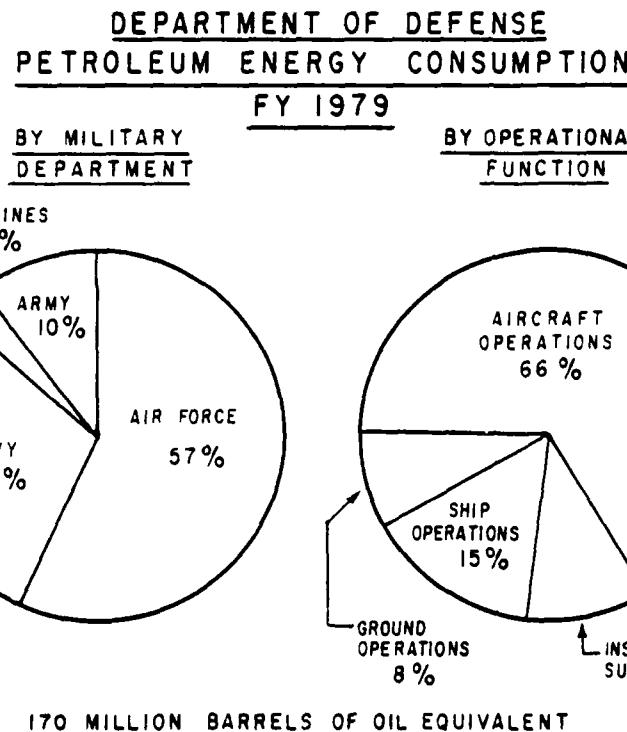


Figure I-5

II. Energy Management

A. General

The organization for effective energy management in DoD is decentralized. It is, however, structured with the flexibility to ensure adequate functional coordination. This organization is designed to handle not only energy contingencies which require fast response, but also long-range energy plans and programs.

B. Organization (See Figure II-1.)

1. Office of the Secretary of Defense

The Assistant Secretary of Defense for Manpower, Reserve Affairs, and Logistics (ASD(MRA&L)) is the principal DoD energy official.

- a. The Deputy Assistant Secretary of Defense for Energy, Environment and Safety (DASD(EES)), who reports to the ASD(MRA&L), develops overall DoD energy policy and is the focal point for all DoD energy matters. The DASD(EES) chairs the Defense Energy Policy Council for the ASD(MRA&L). The Director for Energy Policy, under the DASD(EES), has responsibility for policy formulation in matters of energy conservation, management, supply, and technology applications.
- b. The Deputy Assistant Secretary of Defense for Installations and Housing (DASD(I&H)), also a deputy to the ASD(MRA&L), provides overall project management of the military construction program. In this capacity, the DASD(I&H) is the focal point for the Energy Conservation Investment Program (ECIP), a program to conserve energy through the retrofit of existing facilities, and has the responsibility for implementing all MILCON related energy policies and programs. The DASD(I&H) is represented on the Defense Energy Policy Council as well.
- c. The Deputy Under Secretary of Defense (Research and Advanced Technology), who reports to the Under Secretary of Defense (Research and Engineering), has management responsibility for energy research and development programs.
- d. The Deputy Under Secretary of Defense (Acquisition Policy), who also reports to the Under Secretary of Defense (Research and Engineering), has management responsibility for conservation retrofit programs at government-owned, contractor-operated facilities, as well as for policies to alleviate defense contractor energy shortages.
- e. The Defense Energy Policy Council (DEPC), a senior level advisory group, provides the ASD(MRA&L) with the means to coordinate energy policy at the highest levels, as well as a

mechanism to contribute valuable feedback on energy programs and problems. Senior staff elements in the Office of the Secretary of Defense, designated special assistants for energy matters of the military services, and principal energy managers in the military services, Organization of the Joint Chiefs of Staff, Defense Logistics Agency and DOE representatives, as appropriate, comprise the DEPC.

- f. The Defense Energy Action Group (DEAG) is a working level group which assists the Director for Energy Policy develop and coordinate energy policy. The DEAG also recommends matters for DEPC consideration. Its membership includes the military services, the Organization of the Joint Chiefs of Staff, the Defense Logistics Agency, and the Defense Fuel Supply Center.
- g. Defense Energy Data Analysis Panel (DEDAP), which the Director for Energy Policy chairs, is composed of representatives of each DoD component concerned with the Defense Energy Information System (DEIS), the DoD energy management information system. The DEDAP reviews and recommends actions on problems or policies that affect the flow of energy management information in the DoD.
- h. The Defense Energy Technology Policy Council (DETPC), a senior level advisory group, provides the Deputy Under Secretary of Defense (Research and Engineering) with the means to coordinate, stimulate, and monitor energy related research and development programs at the highest levels in DoD. Senior staff elements of the Office of the Secretary of Defense and the military services comprise the DETPC.
- i. The Defense Energy Technology Action Group (DETAG) is a working level group which assists the Assistant for Research in the Office of the Deputy Under Secretary of Defense (Research and Advanced Technology) to formulate and coordinate energy technology initiatives. Its membership includes working level staff elements of the Office of the Secretary of Defense and the military services.

2. Organization of the Joint Chiefs of Staff

The Director of Logistics (J-4) of the Organization of the Joint Chiefs of Staff (OJCS) is the principal energy official of the OJCS. He works with the unified and specified commands to assure that their petroleum logistics requirements are met.

3. Military Services

Each military service has a special assistant for energy matters, as well as an energy office to manage departmental energy programs and take lead action, when assigned, in designated areas of interest to all military departments. In all of the military services, commanders at all levels are responsible for the development and maintenance of effective command energy programs.

4. Defense Logistics Agency

The Defense Logistics Agency (DLA) has responsibility for integrated material management of petroleum procurement, distribution, and storage at the wholesale level. This management of bulk petroleum is accomplished through a subordinate activity, the Defense Fuel Supply Center. DLA also has an energy conservation officer to manage the DLA energy conservation program. In addition, DLA is the program manager and system operator for the Defense Energy Information System.

Figure II-1 outlines energy management responsibility in DoD.

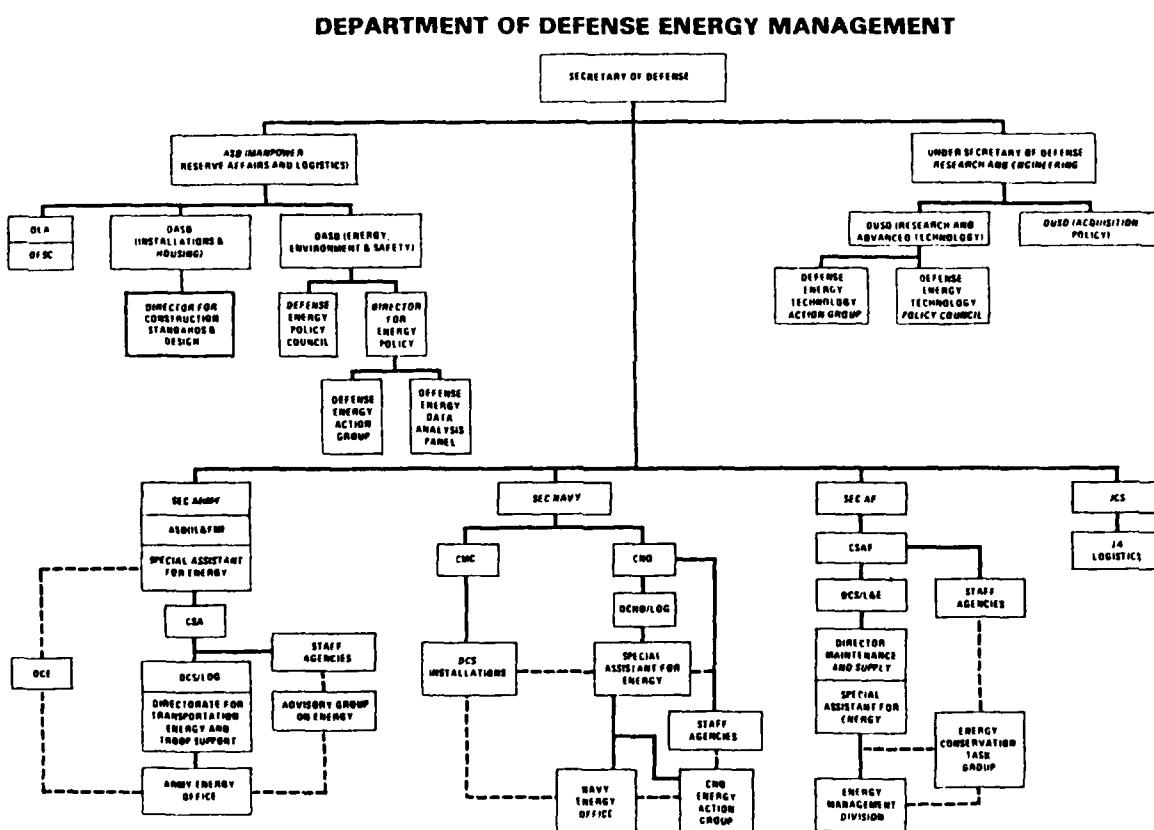


Figure II-1

5. Lead Service Responsibilities

The increased involvement of DoD in energy technologies to meet mission requirements, to meet mandated and cost beneficial energy conservation goals, and to provide DoD unique capabilities in support of the national energy programs, requires that DoD energy

technology efforts be effectively managed and coordinated within and without the DoD. Within the DoD, lead responsibilities have been assigned to the military departments for energy technology applications. These responsibilities are outlined in Table II-1. Energy technology cooperation and coordination between the DoD and the Department of Energy (DOE) is addressed in Chapter IV. The military departments assigned lead responsibilities will:

- o Coordinate DOD activities,
- o Develop plans, objectives, and implementation responsibilities,
- o Encourage emphasis through the DEPC,
- o Promote efficient use of DOD resources,
- o Sponsor the development of specifications, standards, and other mechanisms to promote beneficial use of the technology, and
- o Provide a mechanism for technology transfer.

C. Energy Management Process

1. Defense Energy Management Cycle (DEMC) (See Figure II-2, II-3, and II-4.)

The DEMC is the heart of the energy management process. It ties directly to the overall Planning, Programming, and Budgeting System (PPBS) of the DoD. The DEMC integrates the annual DoD energy program review, annual updates of DoD component energy plans, and certain Presidential report requirements into the DoD's PPBS.

The cycle for the FY 1983 POM and budget began in May 1980 and ends in January 1982 when the President submits the FY 1983 budget to Congress.

The unique energy management aspects of this cycle are:

a. Energy Program Analysis

In May of each year, OSD and the components, through the DEPC/DEAG, conduct a formal energy program review. This review analyzes:

- o Progress made over the past fiscal year toward the achievement of energy goals and objectives,
- o Impact of the most recent budget decisions on the program plan,
- o Component proposals in the new program objectives memorandum,

LEAD SERVICE RESPONSIBILITIES FOR ENERGY TECHNOLOGIES

<u>Army</u>	<u>Navy</u>	<u>Air Force</u>
- Photovoltaic energy system for terrestrial applications	- Geothermal energy	- Multi/high efficiency aircraft propulsion systems
- Multifuel engine other than fixed wing aircraft and ship propulsion	- Co-generation/total energy systems	
- Solar heating and cooling systems for buildings	- Energy monitoring and control systems	- Collodial boiler fuels
- Computer programs to determine building energy characteristics	- Multifuel/high efficiency ship propulsion systems	- Fuel cells
- Wood-fired boilers	- Refuse derived fuels	- Energy storage for mobile/portable systems
- Energy storage and distribution systems for fixed facilities		- Advanced technologies to burn coal in fixed facilities
- Energy conserving structures and construction technology		- Wind energy
- Advanced heating and air conditioning systems		
- Advanced low head hydro		
- Nuclear power systems for land-based applications		
- Electric vehicles		

TABLE II-1

- o Newly mandated requirements and their impact,
- o Changes that may be needed to goals and objectives, and
- o Suggestions for additions or changes to the next Secretary of Defense Consolidated Guidance.

The information developed at the annual energy program review are reflected in a July revision to this plan.

b. DoD Ten Year Building Plan and General Operations Plan

These two baseline plans covering the energy management aspects of buildings (installations) and general operations (mobility) are registered with the Federal Energy Management Program Office of the DOE. The DoD Energy Management Plan (DEMP) provides an annual update to both plans.

c. Component Energy Plans

Each military department updates its energy management plan in the first quarter of each calendar year to reflect the latest budget decisions. DoD submits these plans to DOE to update the overall DoD 10-year energy plan.

Figures II-2, II-3, and II-4 outline the DEMC for the current program/budget cycle.

2. Energy Policy Guidance

Defense energy policy guidance is issued in the following documents:

a. DoD Directives and Instructions

Major policy guidance of a permanent nature is promulgated through the DoD directives system. Publication through the DoD directives system assures wide distribution and is indexed in the catalogue of DoD directives and instructions. As such, it is accessible and retrievable throughout the Department of Defense. DoD managers, not directly involved in energy program management, but whom DoD energy management policies affect, are reached primarily through this DoD-wide system. DoD directives and instructions currently provide broad guidance, for example, on petroleum management responsibilities and broad energy conservation policies. See Appendix C for a complete list of energy related directives and instructions.

b. Defense Energy Program Policy Memoranda

Policies directed primarily to the DoD energy management community, or which can be disseminated effectively without using the more structured DOD directives system, are contained in Defense Energy Program Policy Memoranda (DEPPMs). DEPPMs are also used to issue very specific energy program management

DEFENSE ENERGY MANAGEMENT CYCLE (1980 and 1981)

1979

- MAY ● COMPONENTS SUBMIT POM '82
- MAY/JUNE ● OSD/COMPONENTS CONDUCT ENERGY PROGRAM REVIEW TO PLAN FOR POM '83
- JULY ● OSD PUBLISHES REVISED DOD 10 YEAR ENERGY PLAN BASED ON PROGRAM REVIEW
- OSD SUBMITS ANNUAL REPORT TO DOE. REPORT CONSISTS OF REVISED DOD ENERGY PLAN AND LATEST UPDATES OF COMPONENT PLANS
- REVIEW OF POM '82 CONTINUES
- AUGUST ● SEC DEF DECISIONS ON POM '82
- SEP ● COMPONENTS BEGIN WORK ON POM '83 BASED UPON REVISED DOD PLAN AND POM '82 DECISIONS
- OCT ● COMPONENTS SUBMIT FY '82 BUDGET FOR OSD/OMB REVIEW
- OCT DEC ● OSD/OMB REVIEW FY '82 BUDGETS
- OSD/EES INPUT TO CG FOR POM '82 BASED UPON REVISED DOD PLAN AND POM '82 DECISIONS
- SEC DEF FINAL FY '82 BUDGET DECISIONS

1980

- JAN ● COMPONENTS UPDATE ENERGY PLANS BASED UPON POM AND BUDGET DECISIONS
- MAY ● COMPONENTS SUBMIT POM '83
- OSD/COMPONENTS BEGIN CYCLE FOR POM '83 FOLLOWING THE STEPS TAKEN FOR POM '82

Figure II-2

**DEFENSE ENERGY MANAGEMENT CYCLE
FOR POM '83 AND FY '83 BUDGET**

1980

MAY/JUNE	● OSD/COMPONENTS CONDUCT ENERGY PROGRAM REVIEW
JULY*	● OSD PUBLISHES REVISED 10-YEAR DOD ENERGY PLAN BASED UPON PROGRAM REVIEW
SEP/OCT	● COMPONENTS BEGIN WORK ON POM '83 BASED ON POM '82 DECISIONS AND REVISED 10-YEAR PLAN
NOV/DEC	● OSD/EES INPUT INTO CG BASED UPON POM '82 DECISIONS AND REVISED 10-YEAR DOD PLAN

1981

JAN	● SEC DEF ISSUES CG
MAY	● COMPONENTS SUBMIT POM '83
JUN-AUG	● OSD REVIEW AND DECISIONS ON POM '83
AUG-SEP	● COMPONENTS PREPARE FY '83 BUDGET BASED UPON POM DECISIONS
OCT-DEC	● OSD/OMB REVIEW OF FY '83 BUDGET

1982

JAN	● PRESIDENT SUBMITS FY '83 BUDGET TO CONGRESS
	● COMPONENTS UPDATE ENERGY PLANS BASED UPON FY '83 POM AND BUDGET DECISIONS

*EACH JULY, THE REVISED 10-YEAR DOD PLAN, ALONG WITH THE MOST
RECENT UPDATES OF THE COMPONENT PLANS WILL BE SUBMITTED TO DOE
TO SATISFY THE ANNUAL REPORTING REQUIREMENT OF E.O. 12003.

Figure II-3

THE DoD ENERGY MANAGEMENT CYCLE

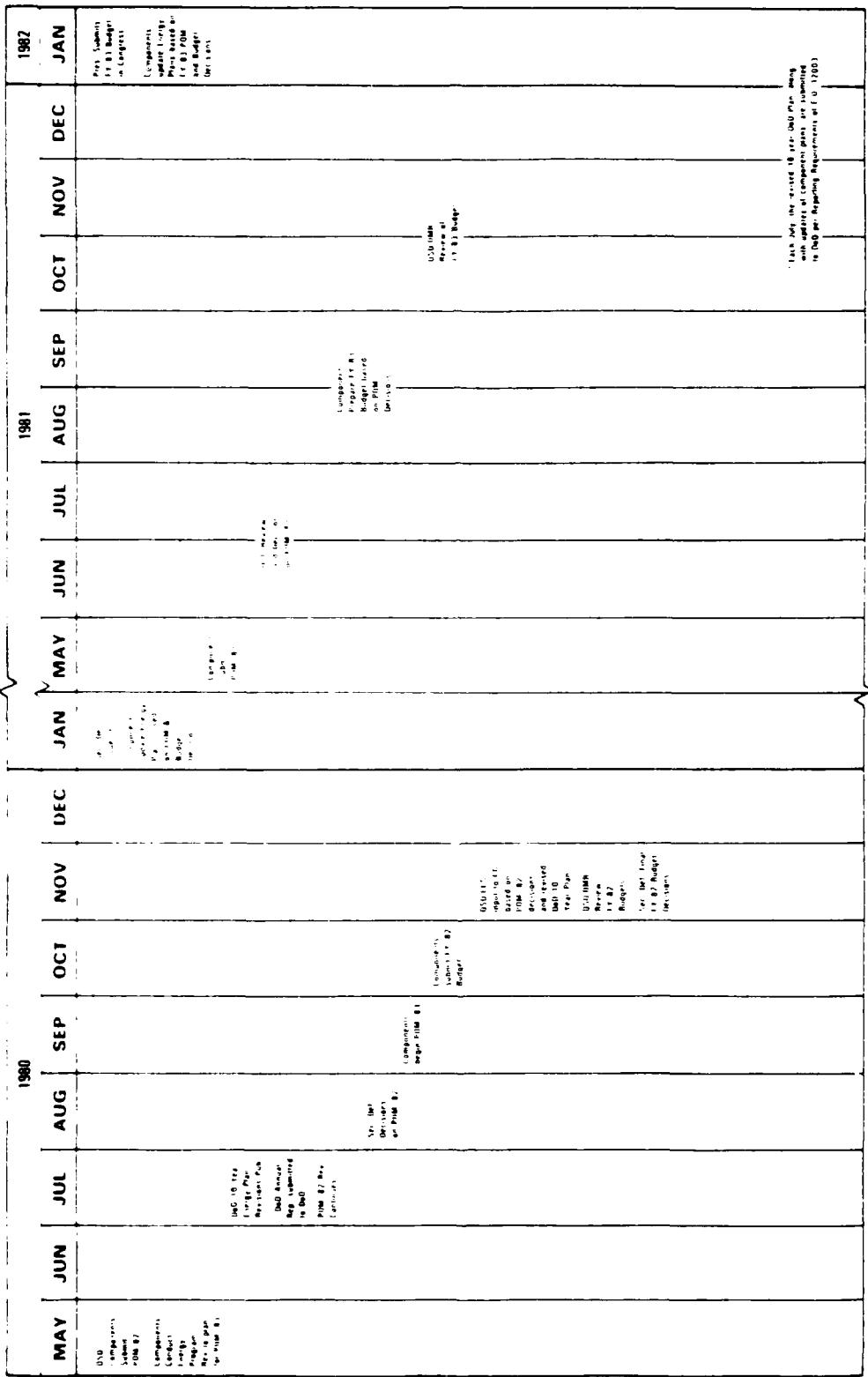


Figure II-4

guidance based upon more broadly written DoD directives and instructions. Existing DEPPMs, for example, establish specific energy goals and set forth a charter for management of the DOD photovoltaic program office. Appendix C contains a current list of DEPPMs.

3. Management Information

The Defense Energy Information System (DEIS) provides reliable and objective energy information for all DoD activities to responsible officials in OSD, JCS, military services, DLA and theater commanders, eliminating duplicative energy data reporting requirements. It consists of the DEIS I, Bulk Petroleum Product Report, and the DEIS-II, Utility Energy Report.

- o The DEIS-I provides information on inventory, consumption, resupply, and sale of bulk petroleum products throughout the Department of Defense. It identifies all Defense Logistics Agency owned petroleum products in transit (Military Sealift Command (MSC) tankers).
- o The DEIS-II identifies inventory for coal, propane, and liquified petroleum gas (LPG) only, and the consumption of all utility energy (electricity, natural gas, propane, LPG, coal, fuel oil, and purchased steam and hot water). It also compares energy consumption with baseline consumption periods to determine energy conservation achievements.

Figure II-5 illustrates the types of data collected and displayed by the DEIS.

The current DEIS is a batch process system that was implemented in 1973-1974. It is now being redesigned to incorporate data base management, provide remote on-line access, and permit enhanced policy and conservation performance analysis. New data elements, related to utility energy consumption, will include square feet of conditioned space, degree days, and several new energy sources. Improvements will be implemented incrementally beginning in 1980. Complete implementation is anticipated before the end of FY 1981.

DEIS DATA

DEIS-I (PETROLEUM REPORT)

PRODUCTS	DATA FIELDS	SUMMARIES AND DISPLAYS
AVIATION GASOLINES	INVENTORY	REPORTING ACTIVITIES
JET FUELS	CONSUMPTION	MAJOR COMMANDS
MOTOR GASOLINES	ISSUES	MILITARY SERVICE
DISTILLATES	RECEIPTS	CINCs
RESIDUALS	TRANSFERS	STATES AND COUNTRIES
	SALES TO NON-DOD	CONUS AND WORLDWIDE
	ACTIVITIES	
	PRODUCTS IN TRANSIT	

DEIS-II (UTILITY REPORT)

ENERGY SOURCES	DATA FIELDS	SUMMARIES
ELECTRICITY	INVENTORY (I.E., COAL,	REPORTING ACTIVITIES
NATURAL GAS	PROPANE/LPG)	MAJOR COMMANDS
PROPANE/LPG	CURRENT CONSUMPTION	MILITARY SERVICE
HEATING FUEL	BASELINE CONSUMPTION	STATES AND COUNTRIES
COAL	PERCENT CHANGE IN	CONUS AND WORLDWIDE
STEAM AND HOT	CONSUMPTION RATE	
WATER		

Figure II-5

III. Energy Management Program

It is the policy of the Department of Defense (DoD) to promote military readiness through programs to assure energy supply, to become more energy efficient, reduce dependency on critical fuels, and increase the use of alternative energy resources. The defense energy management program provides the framework for the energy management program required to implement and monitor this policy. The defense energy management program covers two broad but interrelated areas:

- o Energy supply for mobility operations and installation support, and
- o Energy conservation and efficiency in mobility operations and installations support.

The application of energy technologies in these two areas will contribute greatly to the goals and objectives of the entire energy management program areas. Long range defense energy goals and objectives to the year 2000 have been established for these program areas. The 1985 energy goals and objectives are outlined below. A list of the 1985-2000 goals have been issued in Defense Energy Program Policy Memorandum 80-6 (Appendix B). These goals and objectives will be used as guidelines to develop detailed plans and programs within the military departments that will allow the objectives to be met. Attainment of the goals is directly dependent on budgetary support, however. Resource requirements to achieve these defense energy goals and objectives and resources programmed against these requirements for the current five-year defense planning period is depicted in Table III-1.

For the most part the services have requested the required resources as part of the POM minimum level requests. The special programs listed contain projects that demonstrate the application and practicality of a wide variety of energy technology innovations for both mobility and conservation efforts.

Energy Management Priorities for 1980

The Department of Defense is dedicated to achieve the national energy goals which the Congress and the President have mandated, to achieve as much energy self-sufficiency as possible, and to reduce energy costs. To attain these objectives, while ensuring the operational readiness of our forces, we have divided our energy management program into four priorities for 1980:

1. Make DoD less vulnerable to supply disruption;
2. Implement energy conservation measures that will improve our energy conservation performance;
3. Pursue the challenge of transition from petroleum to synthetic fuel; and
4. Implement joint DoD-DOE energy technology projects to help us to reduce our reliance on scarce fuel sources.

MAJOR ENERGY PROGRAMS

Fiscal Year Requirement / Porta	1982				1983				1984			
	R	P/N	P/B	P/E	R	P/H	P/B	P/E	R	P/H	P/B	P/E
Energy Conservation and Management (ECA)	22,600	10,060	10,500	12,600	22,960	8,860	12,600	14,100	26,160	11,860	13,500	14,100
Energy Equipment Program (EEP)	46,000	16,000	16,000	16,000	54,800	15,800	15,800	15,800	57,800	15,800	15,800	15,800
Solar/Renewable/Geothermal	31,000	1,000	1,000	1,000	15,495	183,300	1,300	1,300	183,300	183,300	1,300	1,300
Solid Fuel (Coal, Wood, Refuse Derived Fuel)	134,900	21,000	12,400	12,400	251,900	134,800	96,000	96,000	61,700	67,400	100,000	103,600
Syratels (Shale, Coal, Tar Sands, Biomass (Fuel, Alcohol))	41,670	26,572	5,900	5,900	53,688	32,083	7,500	7,500	69,434	45,520	9,200	9,200
Energy Technology Demonstration (ETD)*	19,900	17,000			53,800	51,800			26,400	25,900		
Energy Conservation Investment Program (ECIP)**	291,700				286,900				260,500			
Aircraft and Ship Conservation (Navy)	38,900	38,900			45,800	45,800			43,900	43,900		
POL Storage Construction	11,425				24,794		1,800		48,640		2,730	
POL Storage Leasing	6,320				12,640		25,280					
<hr/>												
Fiscal Year Requirement / Porta	1985				1986				1987			
	R	P/M	P/B	P/E	R	P/H	P/B	P/E	R	P/H	P/B	P/E
Energy Conservation and Management (ECA)	29,270	13,870	14,500	15,400	31,170	13,870	13,870	13,870	31,170	13,870	13,870	13,870
Energy Equipment Program (EEP)	69,800	15,800	15,800	15,800	65,800	15,800	15,800	15,800	65,800	15,800	15,800	15,800
Solar/Renewable/Geothermal	41,300	1,500	1,500	1,500	133,780	41,500	41,500	41,500	133,780	41,500	41,500	41,500
Solid Fuel (Coal, Wood, Refuse Derived Fuel)	120,500	40,500	40,500	40,500	204,500	45,500	45,500	45,500	204,500	45,500	45,500	45,500
Syratels (Shale, Coal, Tar Sands, Biomass (Fuel, Alcohol))	64,790	42,930	10,600	10,600	64,830	42,270	11,800	11,800	64,830	42,270	11,800	11,800
Energy Technology Demonstration (ETD)**	506				25,900				25,900			
Aircraft and Ship Conservation Program (CSCP)	31,900	33,900			31,900	33,900			31,900	33,900		
POL Storage Construction	48,640				48,640		12,146		48,640		12,146	
POL Storage Leasing	50,360				50,360		2,800		50,360		2,800	

* R = Requirement (\$000)
 P = PDI Funding (\$000)
 M = Minimum Level
 B = Basic Level
 L = Enhanced Level

** Not all requirements have been determined

Table III-1

These energy management priorities for 1980 are based on our assessment of energy programs to date, and the calculation of optimal means to achieve our longer-term goals of energy self-sufficiency and cost reduction.

Energy Management Priority Group I

Energy supply assurance actions contained in this energy management priority group are related to energy supply and procurement. They are designed to lessen DoD's vulnerability to energy supply disruptions. Specific actions will provide:

- o The completion of policy and regulatory initiatives begun in 1979 to provide prompt priority allocation to DoD of energy supplies during periods of disruption,
- o Revised policies and procedures to increase energy supply flexibility such as simplified contracting procedures, innovative acquisitions strategies, and fewer stockage constraints, and
- o A DoD petroleum products stockage policy and a program to eliminate tankage deficiencies.

Energy Management Priority Group II

Energy conservation emphasis in 1980 will provide:

- o Comprehensive oversight of the entire DoD energy conservation program to DoD energy managers, and
- o Quantum improvements in the DoD energy data base, development of measures of energy efficiency, measurement of progress against Presidential and DoD energy conservation goals, and the correlation of expenditures for energy conservation efforts to energy conservation performance.

Energy conservation incentives will also be implemented to motivate DoD personnel to improve energy conservation performance. Incentive programs will be designed to recognize and reward, through monetary and non-monetary means, excellence in energy conservation and efficiency.

Energy Management Priority Group III

Through the Mobility Fuels Technology Program DoD must continue to pursue the long-term technological challenge of fuel transition from petroleum to other liquid fuels from oil shale, coal, and tar sands.

The major thrusts of the DoD synfuels program are directed toward the application and, when necessary, the development of specific technologies that will enable DoD:

- o To encourage, in cooperation with DOE, the commercialization of a domestic synthetic fuels industry, capable of producing mobility fuels for military use;

- o To utilize domestically produced synthetic fuels and alternate conventional fuels in military mobile systems;
- o To reduce overall energy use through efficiency improvements without compromising flexibility, readiness, or performance;
- o To achieve an adequate degree of energy self-sufficiency for military installations through reduced dependence on petroleum fuels; and
- o To develop a family of military engine systems that are capable of burning a broad range of both synthetic and conventional fuels.

DoD involvement through guaranteed government purchase of synthetic fuels appears likely under most Congressional proposals. Actions undertaken in this priority group include continued cooperation, coordination, and support for the DoD mobility fuels RDT&E planning efforts and the consummation of a DoD-DOE memorandum of understanding on synthetic mobility fuels.

DoD will also identify in 1980 the logistics impacts of synfuels on distribution and storage facilities procedures to be able to develop a logistic system action plan to accommodate the purchase, storage, and distribution of synfuels when they become available.

Energy Management Priority Group IV

This priority group covers energy technology demonstration initiatives.

DoD will implement the joint DoD-DOE energy initiatives in 1980 which were begun in 1979. Demonstration of a wide variety of energy conversion technologies will help reduce DoD's reliance on scarce fuel sources and will demonstrate to the nation their application and practicality. The demonstration activities at the three DoD "showcase" installations will be given high priority. Actions will be undertaken in this priority group to identify funding responsibilities for these initiatives.

The lead service management responsibilities for energy technology established in DEPPM 78-6, October 2, 1978, will be strengthened in this priority group through the issuance of a DoD instruction. The instruction will require that adequate resources to carry out lead service assignments are identified in military department programs and budgets.

A. Mobility Energy Goals and Objectives

The mission of the Department of Defense is clearly to be prepared to defend successfully the country against foreign aggression. Combat readiness requires prodigious amounts of energy. Our most basic policy, therefore, is to ensure a supply of energy sufficient to meet essential training requirements in peacetime and sustainability requirements in wartime.

1. Mobility Energy Supply

Goal: Complete actions to assure access to petroleum supply through codification of priority allocation procedures, innovative acquisition policies, and secure crude streams.

To accomplish this goal the actions in Table III-2 will be completed.

Goal: Decrease storage deficiencies 10 percent as compared to deficiencies which existed in FY 1980.

This goal includes the acquisition of newly built storage, leased storage and storage which is out of service returned for utilization. Figure III-1 displays the total storage requirement and the yearly objectives to decrease storage deficiencies which exist in 1980. Recent authority to DLA will help alleviate this problem.

Goal: Develop interim specifications for mobility fuels so that DoD will be able to use commercially available fuels (petroleum and non-petroleum derived).

Goal: Obtain one percent of mobility energy from non-petroleum derived fuel and, as a part of this goal, increase the use of gasohol to 25 percent of unleaded gasoline usage, by 1985.

It is anticipated that sufficient supplies of alcohol and non-petroleum derived fuel will be available. DoD's planned use of gasohol through the year 2000 is depicted by the shaded areas in Figure III-2. Mobility energy from non-petroleum derived fuels have centered on the use of methanol and ethanol as partial or total replacement for petroleum products.

Department of Defense policy is to comply fully with Section 815 of the Public Law 96-107 which mandates that, to the maximum extent feasible, and consistent with overall defense needs and sound motor vehicle management practices, the Department of Defense will enter into contracts, under competitive bid, subject to appropriations, for the purchase of domestically produced alcohol or alcohol-gasoline blends that contain at least 10 percent domestically produced alcohol for use in Department of Defense-owned or operated motor vehicles.

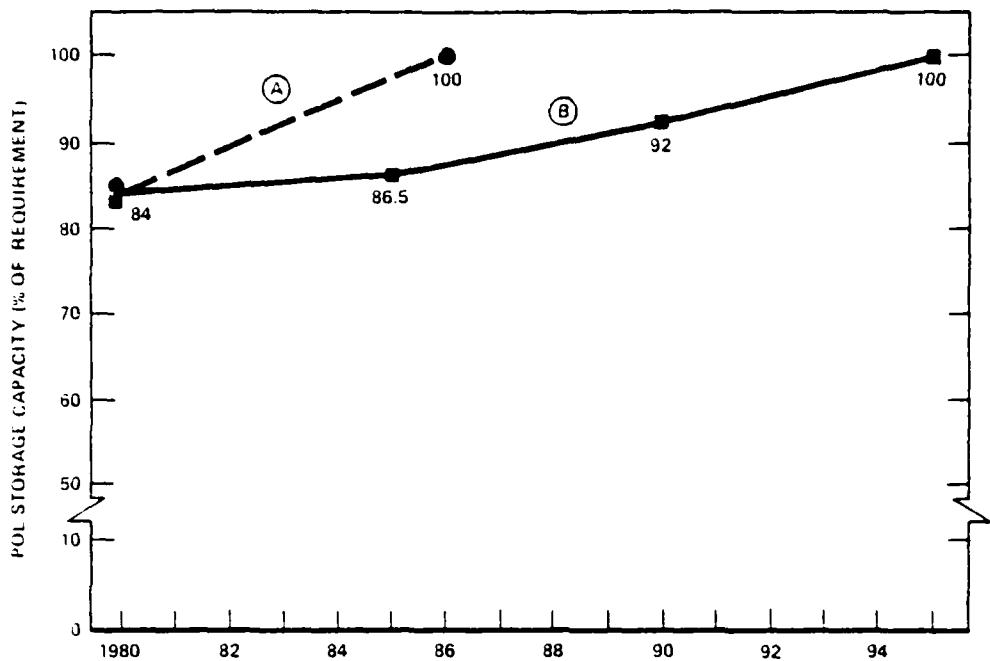
We are conducting motor vehicle fleet tests and engine endurance tests at a number of installations to determine the suitability of gasohol for use in all gasoline-consuming military equipment. While the Army is the lead military department for conducting these tests, the Navy is also conducting fleet tests at several locations.

Preliminary engine tests were completed in a joint effort between the U.S. Army Mobility Equipment Research and Development Command (MERADCOM), Fort Belvoir, Virginia, and the Department of Energy. In this program, the Army Fuels and Lubricants Research Laboratory, San Antonio, Texas, investigated the effects of alcohol fuels on spark ignition engine wear. In December, 1979, MERADCOM also initiated

ASSURE PETROLEUM SUPPLIES

Actions	Milestone		Milestone	Target	Completed
	Target	Completed			
REGULATORY AND FOLLOW-ON ACTIONS (IMPLEMENT INC. FILE OFFSHORE PRODUCTION ACT (OPA))					
Private Regulation	Oct 79		Submit NPIR legislation to Congress,	May 80	Apr 80
- Draft proposed regulation with DoE,			- Meet with small refiners on DoS,		
- Publish draft regulation in Federal Register,	Nov 79		- Determine Congressional direction on provison to DoD of NPIR/DoS/Strategic Petroleum Reserves (SPR) crude,	Jan 80	
- Hold public hearings on proposed regulations,	Feb 79		- Direct and assist Defense Fuel Supply Center to prepare for accepting title to and contracting for refinement of DoS crude,	Jul 80	
- Review statements and provide DoD comments to DoE, and	Apr 80		- Obtain legislation permitting NPIR use by DoD,	Jul 80	
- Publish final regulation.	Jun 80		- Obtain decision on allocation of NPIR to SPK or DoD	Jul 80	
Develop and Test OPA Invocation Criteria			- Start OCS crude acceptance and small refinery contracting,	Oct 80	
Develop proposed criteria,	Dec 79		- Start NPIR crude acceptance and small refinery contracting (if authorized), and	Oct 80	
- Circulate revised criteria for comment within DoD,	Jan 80		- Evaluate process and prepare to expand both access to royalty crude.	Feb 81	
- Review comments and modify criteria,	Mar 80				
- Develop command post exercise to test various criteria and implementation mechanics,	Jun 80				
- Schedule test,	Aug 80				
- Complete test scenarios,	Apr 81				
- Conduct "FLEX 81", and	May 81				
- Finalize criteria and procedures for OPA invocation.	Aug 81				
ASSURE CRUISE OIL SUPPLY					
Open negotiations to obtain oil from Continental Shelf (OCS)/Naval Petroleum Reserve (NPR) crude with DoD and Department of Interior (DOI)	Jan 80		- Further improve petroleum contracting procedure based on previous actions taken. Such improvements will include reducing the size of the contract document, eliminating counter-productive contract provisions, and enhancing prompt payment procedures.	Dec 80	
Perform analysis of legal and management requirements of the DoD/DOI initiatives.	Mar 80				

PETROLEUM STORAGE REQUIREMENT



(A) PROJECTED DECREASED STORAGE DEFICIENCY TO ACHIEVE STORAGE OBJECTIVE
THROUGH PROGRAMMED CONSTRUCTION, CONVERSION/MODIFICATION/REHABILITATION
AND LEASE ARRANGEMENTS.

(B) PROJECTED DECREASED STORAGE DEFICIENCY TO ACHIEVE OPTIMUM LONGTERM
MIX OF OWNED/LEASED STORAGE

Figure III-1

administrative and tactical vehicle fleet tests involving 60 vehicles. Due to storage tank leaks that were identified in February, 1980, most gasohol storage at MERADCOM was temporarily taken out of service. As an interim measure, MERADCOM is using two tank trucks to supply this fleet with gasohol, and tests are now in progress.

Tactical fleet tests are also in progress using M-151 jeeps and M-880 1½ ton trucks. Four locations have been selected for these tests, with 10 jeeps and 10 trucks using gasohol, and 10 jeeps and 10 trucks using unleaded gasoline as control vehicles at each location. The locations and the status of the tests are as follows: Fort Belvoir, Virginia (start in July, 1980), Fort Lewis, Washington (began in June, 1980), Fort McCoy, Wisconsin (start in July, 1980), and Fort Polk, Louisiana (tentative). When these tests are fully in progress, the Army will be testing a fleet of 80 tactical vehicles using gasohol in varying climates around the United States.

At the conclusion of its engine endurance and fleets tests in September, 1981, the Army will have compiled detailed technical information concerning the use of gasohol in

USE OF GASOHOL

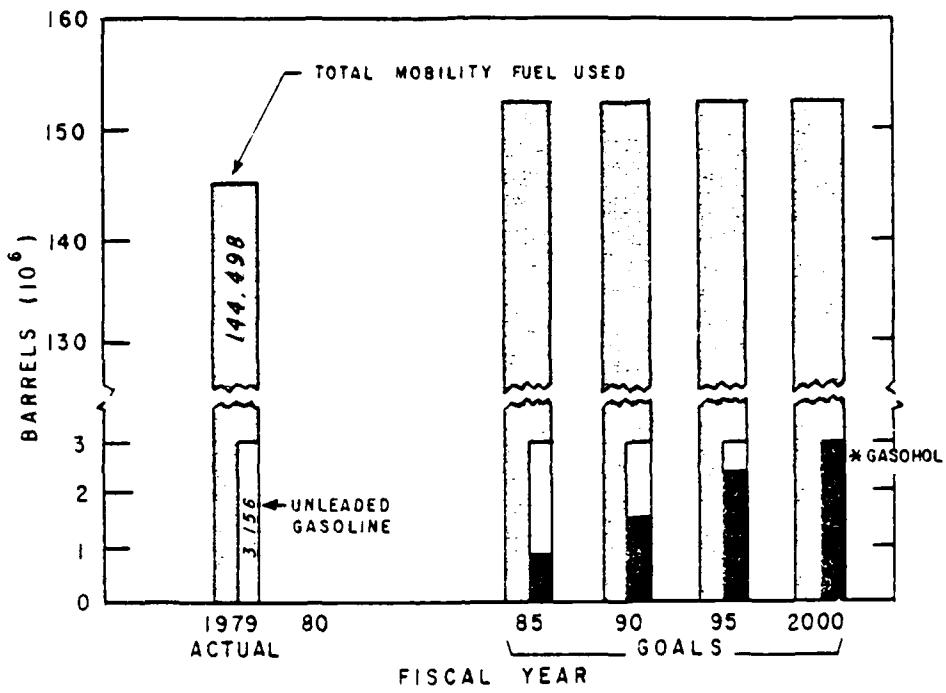


Figure III-2

administrative, support, and tactical vehicles. The data will include:

- o Stability of elastomeric and plastic materials, i.e., gaskets and metal alloys in engines using alcohol fuels,
- o Compatibility of alcohol fuels in fuel storage, handling, and distribution equipment, i.e., tanks and hoses,
- o Effect of alcohol fuels on motor vehicle engine lubrication,
- o Effect of alcohol fuels on support equipment, e.g., heaters, pumps, and fuel cells, and
- o Effect of alcohol fuels on motor vehicle fuel efficiency, i.e., miles per gallon and performance, i.e., starting, idling, and acceleration.

Preliminary results of these tests indicate that the following areas require additional attention:

- o Leakage in gasohol pump metering and dispensing systems due to dissolution of elastomers, e.g., o-rings and gaskets,

- o Dissolution of motor vehicle fuel system elastomeric components, e.g., accelerator pump cups,
- o Increased incidence of fuel filter plugging due to dirt loosening,
- o Corrosion of aluminum alloy, magnesium alloy, and steel engine components,
- o Increased fuel pump wear, and
- o Phase separation of alcohol from gasoline in colder climates.

The Army's gasohol testing program is necessary to demonstrate that gasohol may be used in tactical vehicles having different gasoline usage patterns than administrative vehicles. The Army has examined extensively test results from the public sector and is closely coordinating its efforts with the Department of Energy and private groups such as the American Society for Testing and Materials, and the Society of Automotive Engineers. Following successful completion of these tests, we will report the effect of gasohol on tactical vehicles and combat readiness.

The Army test requirements for gasohol for 20 test tactical vehicles each at Fort Belvoir, Fort McCoy, Fort Lewis, and Fort Polk will total 10,000 gallons in FY 1980 and 10,000 gallons during the first quarter of FY 1981. If these test results are positive, then all vehicles at these four installations will begin to use gasohol in the second quarter of FY 1981. As a result, the gasohol requirements for these four Army installations will total 4.2 million gallons in FY 1981. As the Army develops data on its use of gasohol in tactical and administrative vehicles under this test program, it is in compliance with DoD policy to use gasohol while it is collecting usage data of value to the DoD and the nation.

Several Navy installations have also been conducting fleet tests using gasohol. Since May, 1979, the Public Works Department of the Naval Weapons Support Center (NWSC), Crane, Indiana, has operated 26 security vehicles on gasohol out of a fleet of 91 security vehicles. The purpose of these tests, which were less rigorous than those currently being conducted in the Army, was to gain operational experience with gasohol in the areas of maintenance, fuel economy, and vehicle performance. During this period NWSC used 75,000 gallons of gasohol. Due to the good results obtained from those tests, NWSC is now placing its entire fleet of 91 security vehicles, mainly pick-up trucks and station wagons, on gasohol. Based partly on the experience at NWSC and on their own initiative, the Naval Avionics Center, Indianapolis, Indiana, had also placed all its vehicles on gasohol as early as January, 1980.

As a result of its gasohol testing program, MERADCOM completed development of a purchase specification for gasohol for use in administrative and support vehicles in February, 1980. Subsequently, the Defense Fuel Supply Center (DFSC), Cameron Station, Alexandria, Virginia, has established three National Stock Numbers (NSNs) for three grades of gasohol, i.e., special, regular, and premium. DFSC started soliciting for contracts for gasohol in April, 1980, to meet requirements.

The first geographical area being canvassed for gasohol requirements is Region 7. This area comprises the Southwest U.S., including California, Arizona, Nevada, and Utah.

The DFSC has identified a DoD gasohol requirement of three million gallons in Region 7. In addition, other departments and agencies have identified a one million gallon gasohol requirement for Region 7. These include the Department of the Interior, General Services Administration, U.S. Postal Service, Department of Agriculture, and Department of Energy. Although DFSC contracts for gasoline purchases for 22 other federal departments and agencies, it is up to them, not DFSC, to emphasize their use of and to develop requirements for gasohol. The requirement for four million gallons of gasohol represents 17 percent of DFSC's Region 7 unleaded gasoline requirement. In addition, DFSC is awarding a contract for 350,000 gallons of gasohol in Region 3, to cover gasohol requirements in Virginia, Maryland, and Delaware. The first delivery of gasohol for Region 3 will take place in August, 1980, and for Region 7 in November, 1980.

In addition to DFSC's procurement program, the Army-Air Force Exchange System and the Navy Resale and Services Support Office have begun programs to procure gasohol for sale at exchange service stations when local conditions and economics are favorable. It is also DoD policy for all military and civilian Defense personnel to make use of gasohol to the maximum extent practicable when traveling on official government business in government automobiles and/or using government-issued gasoline credit cards.

DoD is prepared to do its share to fulfill the will of the Congress regarding the use of gasohol and to meet the President's goal of replacing 10% of all unleaded gasoline usage in the United States with gasohol by the end of 1981. In summary, therefore, the Department intends to comply fully with Section 815 of Public Law 96-107. Under our current plans, we expect to procure gasohol for use in the continental United States only. As such, the effect of gasohol on combat readiness is not directly an issue. As MERADCOM completes its gasohol tests, we will better understand, and be prepared to remedy, any effect this fuel has on the operation and maintenance of tactical vehicles.

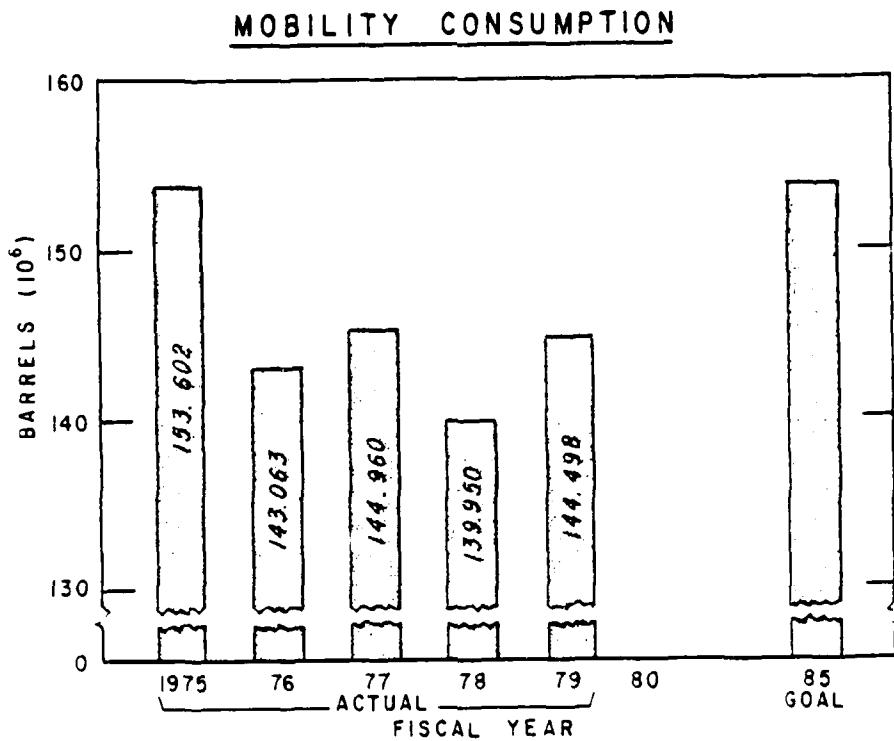


Figure III-3

Goal: Initiate development of conceptual designs for mobile systems not dependent on liquid hydrocarbons fuels.

The research and development program plan is being developed to provide a structural framework to accomplish this goal.

2. Mobility Energy Conservation and Efficiency

Goal: Limit the use of energy in mobility operations to the FY 1975 level of consumption.

This goal and objective has thus far been attained as Figure III-3 records. We anticipate that the 1985 goal will be met.

We plan to continue to limit operational energy consumption to the 1975 consumption level through 1985. This goal provides our commanders an incentive to improve their efficiency. As fuel consumed per training hour decreases, additional training can be provided, thus increasing the proficiency of our forces. The FY 1979 increase reflects Persian Gulf operations.

Examples of mobility energy conservation programs that involve energy technology efforts include:

- o Improved design and use of light weight, high strength materials to enhance energy efficiency in weapon systems;
- o Development of improved coatings for aircraft and ships to reduce turbulence and drag;
- o Use of a specially designed hull cleaning machine to clean Navy ships while waterborne, rather than only during periodic drydocking. This past year 150 ships were cleaned and 250 are scheduled for cleaning this year. Documented sea trials show that a 7.5 percent improvement in overall consumption efficiency can be achieved if hulls, stationed in temperate waters, are cleaned in this manner every 6 to 10 months. Figure III-4 illustrates the effectiveness of a hull maintenance program. The top line shows the typical curve for fouling, where after 300 days out of drydock shaft horsepower requirements have increased by 20 percent from 4,000 to 4,800. Cyclical hull cleaning, the interim solution, results in the sawtooth curve with the related savings. The ultimate solution of no fouling is indicated by a horizontal line.
- o Application of thrust management procedures that promotes wider use of reduced engine power in the operation of aircraft, specifically during take-off climb; and
- o Expansion of the use of training simulators.

FUEL SAVINGS DUE TO HULL CLEANING/OMP COATINGS

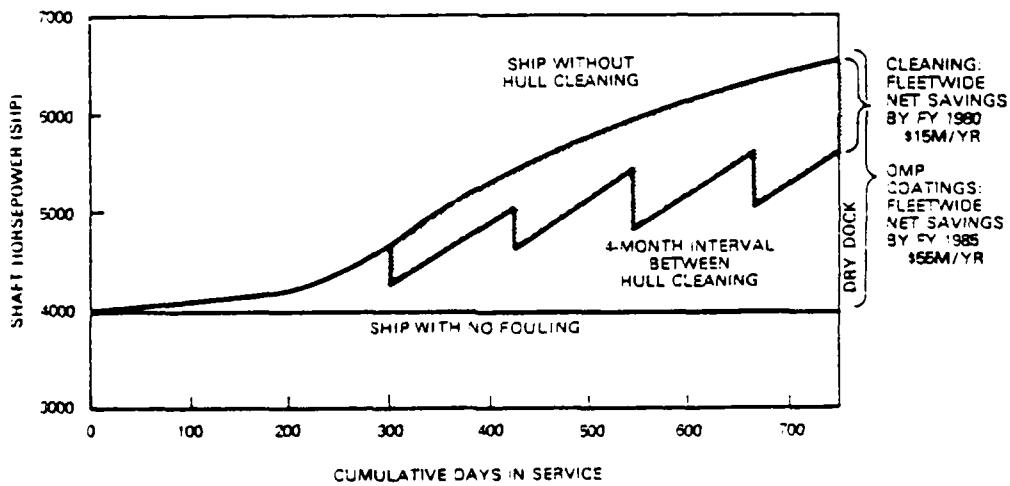


Figure III-4

Goal: Improve aggregate fuel efficiency of operational equipment (to include newly developed or replacement system) and develop internal sub-goals needed to achieve overall efficiency improvements. Develop and utilize methods to measure these energy efficiency improvements appropriate to the peculiarities of service/agency operations.

The DoD is committed to becoming more energy efficient as a part of this commitment, DoD is now in the process of establishing measures of fuel efficiency for newly developed or replacement operational equipment. The following goals have been established for increasing operational efficiency through the year 2000:

<u>YEAR</u>	<u>GOAL</u>
FY 1990	Improve operational efficiency <u>5%</u> compared to FY 1975 levels
FY 1995	Improve operational efficiency <u>10%</u> compared to FY 1975 levels.
FY 2000	Improve operational efficiency <u>15%</u> compared to FY 1975 levels.

In order to achieve these long-range goals, the timetable shown in Figure III-5 has been established to assist in the development of the efficiency standards that will form the basis for measurement.

TIMETABLE FOR DEVELOPING MOBILITY EFFICIENCY STANDARDS

	TIME											
	FY 1980						FY 1981					
	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR
OSD memo to military De- partments to establish efficiency standards									▽			
Draft of efficiency standards										▽		
Review/ revise standards											▽	
Final DoD efficiency standards												▽

Figure III-5

These standards will be established for operational equipment, such as the consumption rate measured in underway steaming hours (Barrel/hr) for ships and flying hours (Barrel/hr) for aircraft. Other measures might include a measure of the movement of cargo such as Barrel/ton mile, for example.

3. General Transportation

Table III-3 shows the inventory of DoD owned motor vehicles as of September 30, 1979, by type of vehicle. Total fleet consists of 139,576 vehicles worldwide with approximately 78 percent operating in the U.S. Table III-4 shows the worldwide inventory of sedans and station wagons both owned and leased by DoD by class of vehicle.

INVENTORY OF DoD MOTOR VEHICLES AS OF
30 September 1979

<u>TYPE OF VEHICLE</u>	<u>DOMESTIC</u>	<u>FOREIGN</u>	<u>TOTAL</u>
Sedans	15,754	4,588	20,342
Station Wagons	3,638	855	4,493
Ambulances	2,189	721	2,910
Buses	4,389	2,796	7,185
Trucks	83,404	21,242	104,646
TOTAL	109,374	30,202	139,576
 <u>% of Fleet</u>	 <u>78.3%</u>	 <u>21.7%</u>	 <u>100%</u>

TABLE III-3

SEDAN/STATION WAGON INVENTORY AS OF
30 September 1979 - Worldwide

<u>CLASS</u>	<u>AUTOMOBILES</u>		<u>STATION WAGONS</u>	
	<u>OWNED</u>	<u>LEASED</u>	<u>OWNED</u>	<u>LEASED</u>
Small	0	0	1	0
Subcompact	1,144	85	60	1
Compact	11,507	575	2,130	230
Midsize	5,059	48	1,471	14
Large	2,632	27	831	1
Limousine	0	0	0	0
TOTAL	20,342	735	4,493	246

TABLE III-4

DoD currently owns over 96 percent of its sedan and station wagon fleet while 4 percent are leased. Table III-5 also shows a breakdown for each class of DoD owned sedans as of September 30, 1979. As can be seen, over 60 percent are compact or smaller and 87 percent are mid-size or smaller.

INVENTORY OF DoD OWNED SEDANS BY CLASS AS OF
30 September 1979 - Worldwide

SEDAN CLASSES

DEPARTMENT	SMALL	SUBCOMPACT	COMPACT	MIDSIZE	LARGE	TOTAL
Army	0	615	6,445	2,580	1,740	11,380
Navy	0	228	1,916	457	837	3,438
Air Force	0	7	1,564	1,558		3,129
Other DoD	0	294	1,582	464	55	2,395
TOTAL	0	1,144	11,507	5,059	2,632	20,342
% of Fleet	0	5.6%	56.6%	24.8%	13.0%	100%

TABLE III-5

DoD's goals regarding fuel consumption require the acquisition of more fuel-efficient vehicles and a reduction in overall fuel consumption. DoD guidelines for conservation of vehicle motor fuels include:

- o Acquisition of more energy-efficient vehicles
- o Reduction of vehicle usage to a minimum
- o Maintenance of vehicles for optimum performance
- o Operation of vehicles in a fuel-efficient manner

The DoD General Transportation goals are:

Goal: Increase the use of electric and hybrid powered administrative vehicle.

It is the policy of DoD to increase the use of electric and hybrid vehicles where appropriate to do so for administrative purposes.

The recent DoD-DOE workshop on joint energy activities addressed the issue of providing hybrid power source powered vehicles for fuel conservation and enhanced performance over present electric vehicles. The objective of this ongoing program is to develop hybrid sources for appropriate on and off road vehicles and to conduct demonstration of properly instrumented vehicles.

The expected benefits to DoD from such a program are power plants for materials handling equipment and for base vehicles. DOE receives similar benefits by having power plants available for its Electric and Hybrid Vehicle program. The priority rating given this DOE program indicates that it is currently an ongoing program and that no changes in current structure or funding are required.

One other topic was discussed under this issue and it concerned Electric and Hybrid Vehicle Demonstration (EHVD). The scope of such a program would be the introduction of EHV's into DoD fleets for practical use in lieu of petroleum fueled vehicles, with the objective being to provide a reduced requirements for imported petroleum in vehicles. The benefits to DoD would be in savings of petroleum for more critical uses. The benefits to DOE would be implementation of a congressional mandate providing an alternative for the nation. It was estimated that each demo in this program would be a cost sharing, four-year endeavor. The priority rating given this program indicates that high mutual interest exists between the two agencies.

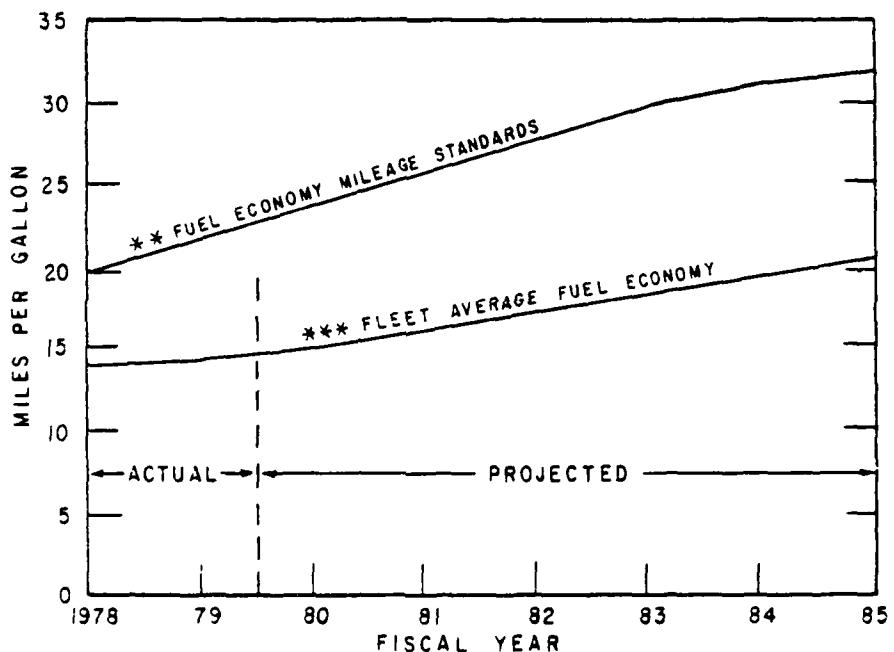
Goal: Exceed the statutory mileage standards in fleet average fuel economy for administrative vehicles by four miles per gallon and insure that the procurement and acquisition of administrative vehicles meet or exceed these standards for the appropriate model year.

Procurement of new vehicles, commencing in FY 1978, is governed by Executive Order 12003 and new vehicles must meet average miles-per-gallon standard:

<u>Year</u>	<u>Fuel Economy Standard (miles per gallon)</u>
1978	20
1979	22
1980	24
1981	26
1982	28
1983	30
1984	31
1985	31.5

Figure III-6 shows fuel consumption for sedans and station wagons which fall under the passenger vehicle acquisitions required by P.L. 94-163, Energy Policy and Conservation Act of 1975. The figure shows both the fuel economy mileage standards and the fleet average fuel economy. Based upon a replacement rate equal to 10 percent of the current fleet, it is estimated that the fleet average fuel economy will increase to 20.5 miles per gallon in 1985 from the 1978 average of 13.7 miles per gallon. The 10 percent replacement rate target has been an extremely difficult target to achieve because of continued funding restraints each program year. Further increase will also continue during the latter half of the 1980's. However, the exact nature of these will be determined by changes in the fuel mileage standards that may be extended past 1985.

FUEL CONSUMPTION FOR DEPARTMENT OF DEFENSE ADMINISTRATIVE VEHICLES*



- * SEDANS AND STATION WAGONS WHICH FALL UNDER PASSENGER VEHICLE ACQUISITIONS REQUIRED BY PL 94-163, ENERGY POLICY AND CONSERVATION ACT OF 1975.
- ** REQUIREMENTS ESTABLISHED BY EXECUTIVE ORDER 12003.
- *** FOR 1980 THROUGH 1985, ESTIMATE BASED UPON A REPLACEMENT RATE OF TEN PERCENT OF THE CURRENT FLEET.

Figure III-6

Goal: Reduce fuel consumption in administrative vehicles below the FY 1975 consumption level.

The following timetable has been established in reducing fuel consumption in administrative vehicles: A 15 percent reduction by 1980 and a 20 percent reduction for 1990 and beyond. Figure III-7 shows fuel consumption in administrative vehicles for FY 1975 through FY 1979. Since 1975, vigorous conservation measures have reduced consumption by almost 15 percent.

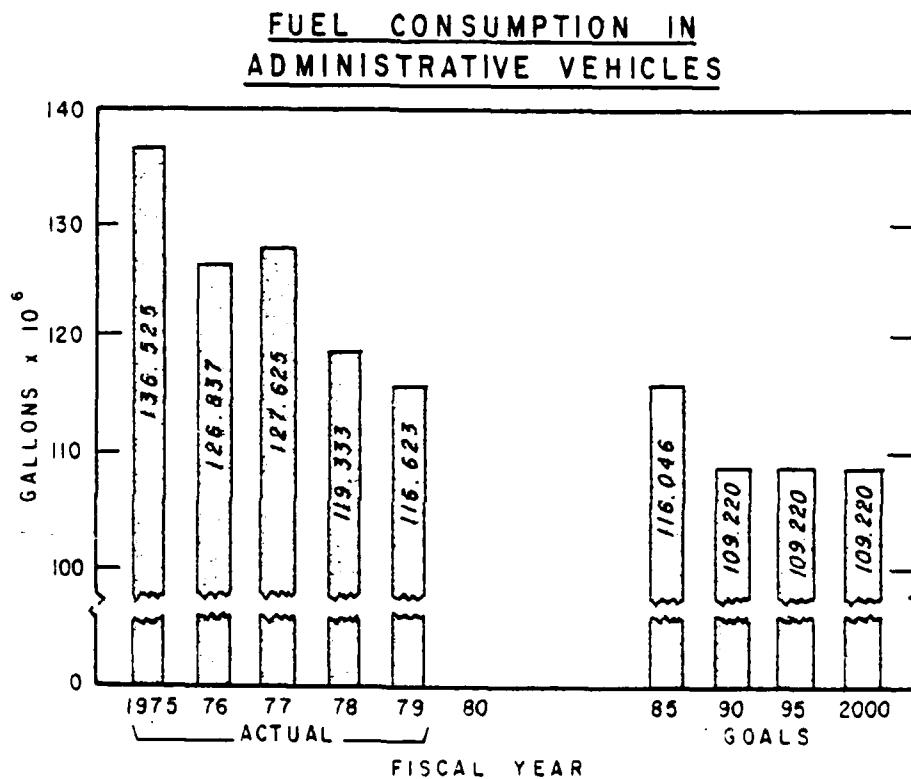


Figure III-7

Because the existing fleet will not become significantly more energy efficient by 1985, reductions in the upcoming five years will be less pronounced.

B. Installation Energy Goals and Objectives

1. Installation Energy Supply

Installation energy consumption accounts for about 40 percent of total energy consumption. DoD is committed to a comprehensive program structured to satisfy mission requirements while applying economic criteria, such as payback and cost/benefit analyses and identifying and selecting new technologies and energy alternatives which will make DoD more energy efficient in the installation energy area.

Goal: Achieve a reduction in the use of natural petroleum fuel consumed in the on-base generation of utility energy from the 1975 level of consumption.

These reductions will be met according to the following timetable:

- o a 30 percent reduction by FY 1985,
- o 35 percent by 1990,
- o 40 percent by 1995, and
- o 45 percent by 2000.

This goal will be met through the use of non-petroleum fuels, geothermal and renewable energy sources, and conservation techniques. Figure III-8 displays the past usage of heating fuel (fuel oil) for installation support and shows the reduced usage required to meet the goals.

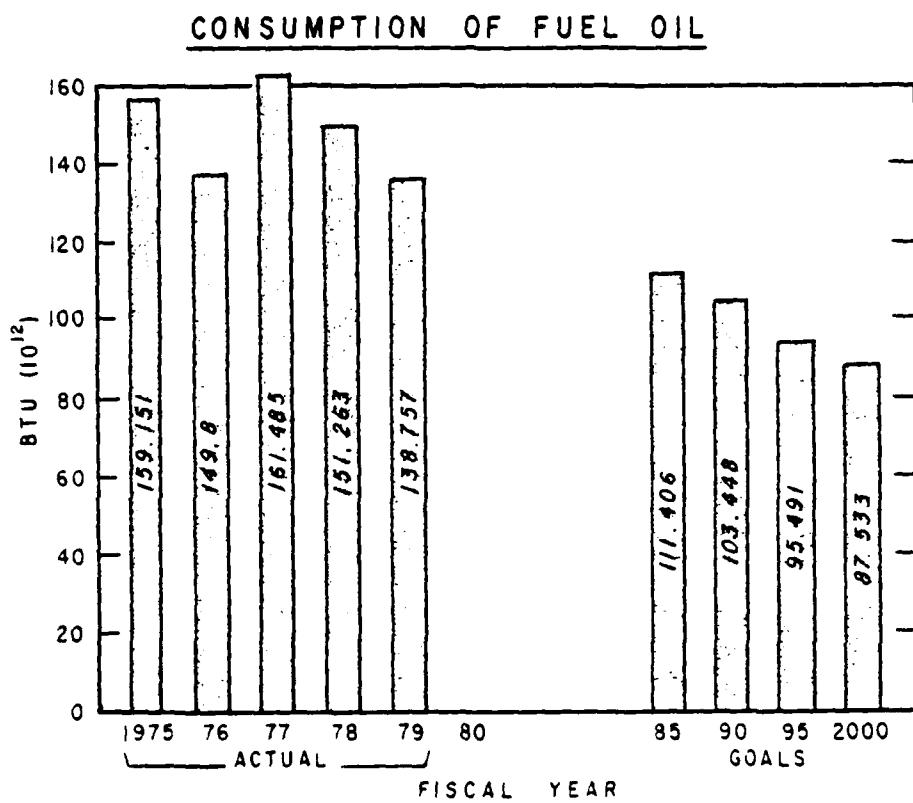


Figure III-8

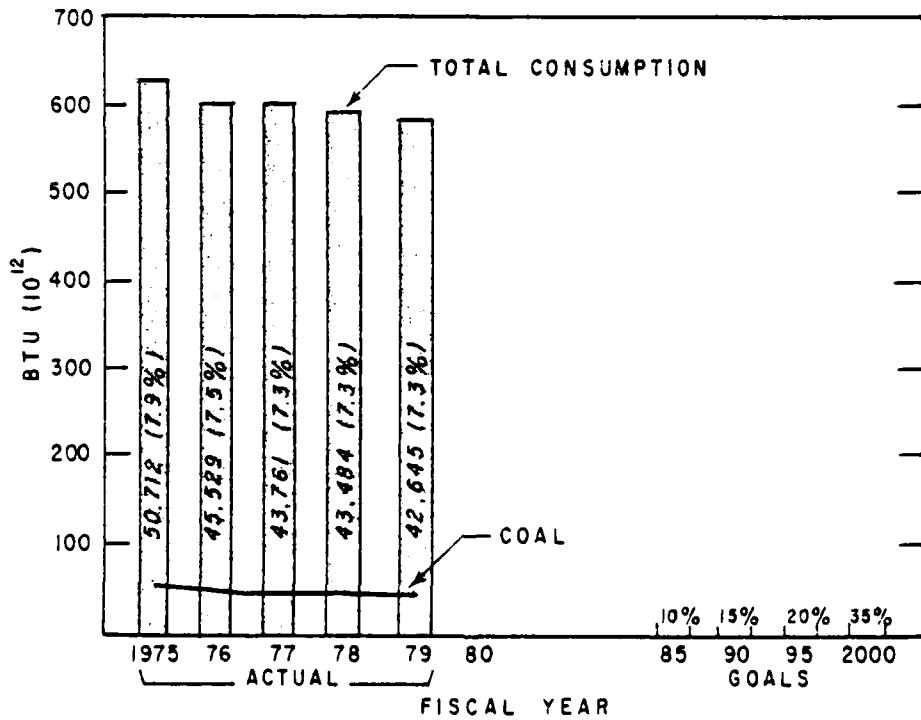
Goal: Obtain an increasing percentage of total energy from coal (solid coal, coal liquids and coal gas), refuse derived fuels and wood.

These increases in percentage of usage will be met according to the following timetable:

- o 10 percent of the total facility's on-base generation of utility energy by fiscal year 1985,
- o 15 percent by 1990,
- o 20 percent by 1995, and
- o 35 percent by 2000.

At present only solid coal is providing a significant amount of energy in DoD. Figure III-9 shows the total usage of installation utility energy and of coal since 1975.

INSTALLATION ENERGY CONSUMPTION FROM SOLID FUEL CONVERSION



* ONLY DATA FOR COAL IS BEING COLLECTED PRESENTLY,
OTHER SOURCES PROVIDE NEGLIGIBLE AMOUNTS.

Figure III-9

Table III-6 shows the projects related to refuse derived fuels and wood that are expected to help meet the 1985 goal. It is estimated that when these projects are all operational, a total annual savings in petroleum of about 2.6×10^{12} Btus will be realized.

The United States has more energy available in coal than in petroleum, natural gas, oil shale, and tar sands combined. Nationwide energy shortages, together with the availability of abundant coal reserves, makes the use of coal for heating, as well as power generation and synthetic fuels, vital to the nation's total energy supply. There are over 800 military installations in the continental United States, and these have roughly 8,000 boiler plants. Forty-two installations have some boiler plants that burn coal.

A total conversion to coal at our 800 installations would cost several billions of dollars. Budget constraints simply preclude a mass conversion program of this order of magnitude. In 1980, DoD is converting or replacing six oil burning and natural gas fired plants with coal burning plants, however. We have also surveyed opportunities for conversion of DoD heating plants from oil or natural gas to coal and other solid fuels, such as refuse derived fuel and wood. The results of the preliminary survey of the conversion candidates indicate that we have 93 facilities which have some potential for ultimate conversion to coal. We have four projects -- Fairchild Air Force Base, Naval Amphibious Base Little Creek, Fort Stewart, and Redstone Arsenal -- in the FY 1981 military construction program. They represent a total request of \$36.2 million, or approximately one percent of our military construction budget.

For some of our planned conversions, we are studying opportunities for the military departments to obtain temporary air quality control variances from state environmental offices to burn coal. This strategy will be used at installations which require minimal modification to burn coal temporarily without additional, long lead time, and costly pollution control equipment. One such installation is the Quantico Marine Corps Development Education Center in Virginia.

Under a separate program, we have been working with the Department of Energy in a jointly sponsored program to demonstrate new technologies for using coal at military installations. Examples of the projects we are considering include:

- o Fluidized bed boilers in which coal is burned in a mixture of air and limestone, resulting in the generation of steam. Fluidized bed combustion has the potential to burn coal more efficiently and economically than conventional coal fired boilers with pollution control equipment. A

SOLID FUEL CONVERSION

Status ¹	Year Operational	Location	Type ² System	# of Bldgs	Gross Sq Ft of Blgs (in Ft ²)	Cost (in \$000)	Annual Estimated Cost Savings (in \$000)		
							Estimated Energy Savings (in MBTU's)	Estimated Cost	Savings
0	1976	NSY Norfolk, VA	MSW	9	37,800	2762	303,400	810	-
0	1979	Ft. McCoy	WPL, WCP	-	-	-	-	-	-
0	1979	Ft. McCoy	WPL, RDF	1	4,200	5	-	-	-
0	1979	Wright Patterson, AFB	RDF	1	13,000	150	14,000	34	34
0	1980	NAS Jacksonville, FL	MSW	-	2762	303,400	810	-	-
0	1980	NAS Mayport, FL	MSW	-	2231	204,000	545	-	-
D	1981	Ft. Eustis	MSW	-	1400	43,000	105	-	-
D	1981	Ft. Leonard Wood	MSW	-	3400	113,000	330	-	-
D	1982	Red River	-	1	9000	515,000	240	-	-
D	1982	Fort Knox	MSW	-	1800	101,000	315	-	-
D	1983	Ft. Stewart	MSW	1	6300	424,000	1200	-	-
D	1983	Redstone	-	-	2800	257,000	-	-	-
0	1985	NAS, Brunswick, ME	-	-	6200	325,600	-	-	-

1 - Status Code

2 - System Code

- D Under Design
- C Under Construction
- O Operational

- MSW Municipal Solid Waste
- RDF Refuse Derived Fuels/Trash
- CGS Coal Gas
- CLQ Coal Liquids
- WPL Wood Pellets
- WCP Wood Chips

Table 111-6

fluidized bed boiler is being installed at the Great Lakes Naval Training Center in Illinois.

- o Gas turbines using low Btu gas produced from coal.
- o Lignite fired boilers.

Goal: Obtain an increasing percentage of total installation energy from geothermal and renewable energy sources using the following technology applications: geothermal heating and electric, low head hydropower, solar heating and cooling, solar electric, biomass (municipal solid waste, refuse-derived waste fuels, and wood), wind, and ocean thermal.

These increases in percentage of usage will be met according to the following timetable:

- o 1 percent of the total facility's utility energy by fiscal year 1985,
- o 5 percent by 1990,
- o 10 percent by 1995, and
- o 20 percent by 2000.

In solar energy, we have actively pursued the solar option under our military construction program and in federal programs that the Department of Energy manages. We currently have 161 solar energy projects, totalling \$59 million, in various stages of operation, construction, or design. Thirty-four of these are operational projects that were the result of our early efforts to utilize solar systems prior to the passage of Public Law 95-356. Prior to the passage of this legislation, we had not budgeted for the inclusion of solar energy systems in our construction projects. Use of the solar option was dependent on good bids on the basic facility in order to have sufficient funds to accomplish its installation. The FY 1981 program was the first opportunity we have had to budget for solar systems in our military construction programs. This program has identified 30 projects in the Department of Army and 36 projects in the Department of Navy which meet the cost effectiveness definition contained in Public Law 96-175. The 66 Army and Navy projects are estimated to cost about \$12.8 million. The Department of Air Force did not budget for solar energy in the FY 1981 request because their studies had not reached a point where reliable cost could be established. They have identified approximately 40 candidate projects, however.

In addition, we are receiving \$6.6 million for 41 projects from the Department of Energy, under the Solar in Federal Buildings Program. The purpose of this program is to assist us in rapidly introducing solar heating and cooling systems in defense facilities, to accelerate the commercialization of

solar technology through federal demonstration, and to provide the federal government with reliability and maintainability data on solar systems. Our projects are for passive and active solar space heating, cooling, and hot water application in a variety of facilities, including administrative centers, dormitories, family housing, shopping centers, and launderettes.

We are also active in the Department of Energy's Federal Photovoltaic Utilization Program (FPUP). The DoD has received \$2.8 million through FY 1979, to design, construct, and install approximately 230 solar cell power systems at defense installations. Applications included environmental sensors, navigational aids, aviation aids, telecommunications, and intrusion detectors. Under the most recent FPUP proposal solicitation, we were awarded \$1.9 million for photovoltaic systems for a control tower, an operations post, an observation post, and a residential power system, as well as four studies which will evaluate more photovoltaic military applications. We have now scheduled new proposals for the next cycle of FPUP. These proposals are directed toward the intermediate electric power grid connected market, including: barracks, manufacturing facilities, hospitals, PX's, office complexes, and schools.

In other energy sources available for meeting this aggressive goal, we are exploring wind and geothermal:

- o Operation of a 15 kilowatt wind energy conversion system at F. E. Warren AFB, Wyoming, and a one kilowatt vertical axis wind turbine at the Air Force Academy; and
- o Development of a large geothermal resource to produce electricity at the China Lake Naval Weapons Center.

Table III-7 shows the projects related to alternative energy sources that are expected to help meet the 1985 goal. It is estimated that when these projects are all operational, a total annual savings in petroleum of about 1.36×10^{12} Btus will be realized.

2. Energy Conservation and Efficiency

Energy conservation goals for installation utility consumption focus on reducing consumption in new and existing buildings. Table III-8 shows the DoD owned buildings and the square footage as of June 1979. Table III-9 shows the types of fuel used for these buildings and other facility energy consumption. This shows the fuel consumption, the cost of that fuel, and the reduction in fuel usage as

ALTERNATIVE ENERGY SOURCES

Status ¹	Year	Location	Type ² System	# of Bldgs	Gross Sq Ft of Bldgs (in Ft ²)	Cost (in \$000)	Annual Estimated Cost Savings (in \$000)		
							Energy Savings (in MBTU's) ³	Cost (in \$000)	Estimated Cost Savings (in \$000)
0	1978	Camp Pendleton, CA MCAS, Kaneohe Bay, HI	SOL WND		650	37,655			
0	1978				25	-			
0	1978	Greenwood, MS	SOL	1	387	16,311			
0	1979	Albuquerque, NM	SOL	1	780	21,088			
0	1979	NAS, Treasure Island, CA	WND		13				
0	1979	Grindavik, Ireland	GEO		161	15,000	40		
0	1979	Seagoville, TX	SOL		1161	15,496	-		
C	1980	Ft. Huachuca, AZ	SOL	3	11,686				
D	1980	Pearl Harbor, HI	SOL	200	680	12,035			
C/0	1980	FPUP Cycle. IA	PHO		178	81,200,000	9.2		
D	1980	Roosevelt Roads, PR	SOL		1291	22,428			
C	1980	FPUP Cycle 1B	PHO		90	69,600,000	6.2		
C	1980	4 sites	PHO		290	81,200,000	16		
C	1980	FPUP Cycle 11	PHO						
III-25									
D	1981	Ft. Benning, GA	SOL		84,608				
C	1984	Keflavik, Iceland	GEO	313	36200	1,022,000			
D	1984	Indiana Army	SOL	1	2012	35,622			
		Ammunition Plant, IN							
D	1984	Honolulu, HI	SOL	1	1,219,392	3256			
D	1984	OTHER PROJECTS COMBINED	SOL		5122	14,563			
C	OTHER PROJECTS COMBINED	SOL				75,794			
0	OTHER PROJECTS COMBINED	SOL				60,077			
0	OTHER PROJECTS COMBINED	SOL				30,589			
TOTAL MBTU OF OPERATIONAL SYSTEMS 1,355,531									

1 - Status Code:
0 Under Design
C Under Construction
O Operational

2 - System Code:
GEO Geothermal
SOL Solar
WND Wind

3 - System Listed provide at
least 11,651 MBTU (2000 BOE)
savings.

Table 111-7

FEDERAL AGENCY BUILDING INVENTORY

(A) Building Categories	(B) Building/Space*	
	Total Number of Buildings	Gross Square Feet (000's)
Hospitals	2,959	48,752
Prisons	298	2,151
Office Buildings	12,624	144,701
Schools	8,399	79,032
Other Institutional Buildings	9,683	51,768
Housing	196,522	765,293
Storage Buildings	53,042	392,593
Industrial Buildings	26,874	257,873
Service Buildings	32,423	251,078
Research & Development Building	6,276	55,221
Utility Buildings	16,511	20,014
All Other Buildings	30,738	60,263
 TOTAL	395,349	2,128,739

* Owned DoD buildings as of 6/79.

Source: Federal Energy Usage Report.

TABLE III-8

compared to the baseline year FY 1975. The goals will be met through the following programs:

- o Energy engineering and analysis program (EEAP) to provide operations and maintenance funds to analyze energy consumption on DoD installations and identify cost effective means to reduce consumption. The FY82-86 funding profile is as follows: FY82 - \$15,300,000; FY83 - \$9,500,000; FY84-FY86 - \$0.
- o Energy conservation investment program (ECIP) to provide military construction funds for cost effective energy conservation projects on DoD installations. Total funding (POM minimum, basic and enhanced levels) for ECIP for FY82-86 is: FY82 - \$291,700,000; FY83 - \$286,900,000; FY84 - \$260,500,000; FY85 - \$253,900,000; FY86 - \$224,000,000.
- o Energy conservation and management program (ECAM) to provide procurement funds or funds from other appropriation accounts for cost effective energy conservation projects in government-owned, contractor-operated facilities. FY82-86 total funding for ECAM is programmed as follows: FY82 - \$33,160,000; FY83 - \$35,560,000; FY84 - \$39,660,000; FY85 - \$43,770,000; FY86 - \$36,170,000.

BUILDINGS AND FACILITIES ENERGY CONSUMPTION
AND COST BY FUEL TYPE

<u>Fuel Type</u>	<u>Fuel Consumption FY 79</u>	<u>Cost of Energy Consumption** \$(000's)</u>	<u>Changes to Fuel Consumption Data Reported From FY 75</u>
Electricity-MWH	25,343,857	\$ 978,272.9	- 3%
Fuel Oil-Gal (000's)	1,000,413	\$ 542,223.8	-13%
Natural Gas- Cu. Ft. (000's)	102,129,096	\$ 246,131.1	-14%
LPG or Propane- Gal (000's)	26,339	\$ 8,454.8	-27%
Coal-Short Tons	1,734,967	\$ 56,750.8	-16%
Purchased Steam- Btu (Billions)	4,016	\$ 19,919.4	+49%
Other-Btu (Billions)			
TOTAL-Btu (Billions)	587,218	\$1,851,752.8	- 8%

** Price for 1979 as specified in the Department of Energy's Usage Report, p. 2, as follows:

1979 AVERAGE ENERGY PRICES

<u>Fuel Type</u>	<u>Unit</u>	<u>1979 Price</u>
Electricity	- (MWH)	\$38.60
Fuel Oil	- (Gal)	.542
Natural Gas	- (000 Cu. Ft.)	2.41
LPG or Propane	- (Gal)	.321
Coal	- (Short Ton)	32.71
Purchased Steam	- (M Btu)	4.96
Auto Gasoline	- (Gal)	.798
Diesel & Petroleum Distillate	- (Gal)	.539
Aviation Gasoline	- (Gal)	.625
Jet Fuel	- (Gal)	.449
Navy Special	- (Gal)	.405

Table III-9

- o Reducing building temperatures during the heating season and increasing building temperatures during the cooling season,
- o Enhanced maintenance of mechanical equipment,
- o Energy awareness and training programs to inform employees how they can contribute to energy conservation, and
- o Energy awareness programs and increased training of maintenance personnel.

In addition, energy efficiency goals will be set (in cooperation with DOE and the services) in fiscal year 1981. These efficiency goals, along with the following programs, will increase the overall efficiency of installation utility consumption.

- o Retrofit existing facilities to improve heating, ventilating, and air condition systems, insulation and weather stripping, and relamping for greater energy efficiencies,
- o Use energy management and control systems, and
- o Consolidate activities wherever possible and practicable.

Specific goals have been set to increase energy conservation and efficiency. These goals are discussed in the following paragraphs.

Goal: Reduce energy usage in existing buildings per gross square foot from the 1975 baseline usage.

These reductions in percentage of usage will be met according to the following timetable:

- o 20% reduction of energy per square foot by fiscal year 1985,
- o 30% by 1990, 35% by 1995, 2nd
- o 40% by 2000.

Total energy usage for all DoD buildings and the total cumulative area (square footage) for buildings have been calculated (or estimated) to derive gross energy use per unit area, as displayed in Figure III-10. Figure III-10 also shows the gross reduction in building energy usage required to achieve the goal. The 1979 Btu/sq. ft. figure has been derived using the baseline square footage. Square footage data is under revision with a major analysis underway. We do not anticipate a significant change as a result of this effort. None the less, continued emphasis must be directed toward reaching the utility energy reduction trend needed to meet the 20 percent goal.

ENERGY USAGE IN EXISTING BUILDINGS

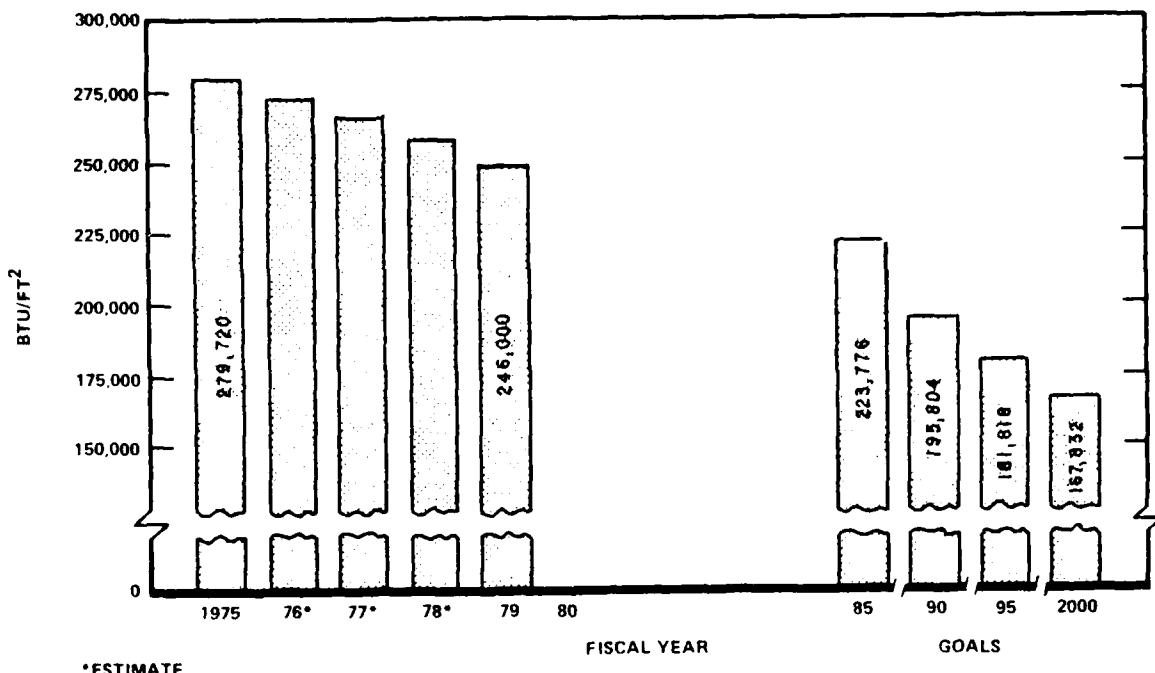


Figure III-10

Goal: Achieve a 45% reduction in energy usage for new buildings per gross foot from the 1975 usage.

New buildings, scheduled for completion after November 8, 1978, will be designed to achieve the 45% reduction. How this is

achieved is left to the military services and the defense agencies, except that the final building design should be determined from at least two alternative systems, one of which includes a renewable energy system. The alternative systems will be evaluated using the DOE/NBS LCC guidelines.

As indicated above, data at the level of detail needed to monitor compliance with this goal is not available. Using the overall BTU per square foot in 1975 of 279,720 BTU/ FT², the new buildings goal for 1985 is 153,846 BTU/FT².

Goal: Energy reductions for industrial or production operations, training, R&D, etc. should be expressed in terms of increased energy efficiency per unit of production or other appropriate productivity measure. Each service/agency should develop and utilize methods to measure energy efficiency improvements appropriate to the peculiarities of service/agency operations.

The DoD is committed to becoming more efficient. As a part of this commitment, DoD is now in the process of establishing measures of energy efficiency. In addition DoD will establish a timetable for meeting improvements in efficiency. Since each service/agency has operations that differ and since energy consumption, for training and R&D especially, have not been considered on an energy efficiency basis in the past, the standards developed initially may change. The standards will probably take the form of such measures as number of Btu per production manhour for aircraft overhauls or number of Btu per student trained for electronic engineering training.

In order to achieve these long range goals the timetable in Figure III-11 has been established by DoD to develop the efficiency standards that will form the basis for measurement.

TIMETABLE FOR DEVELOPING UTILITY EFFICIENCY STANDARDS

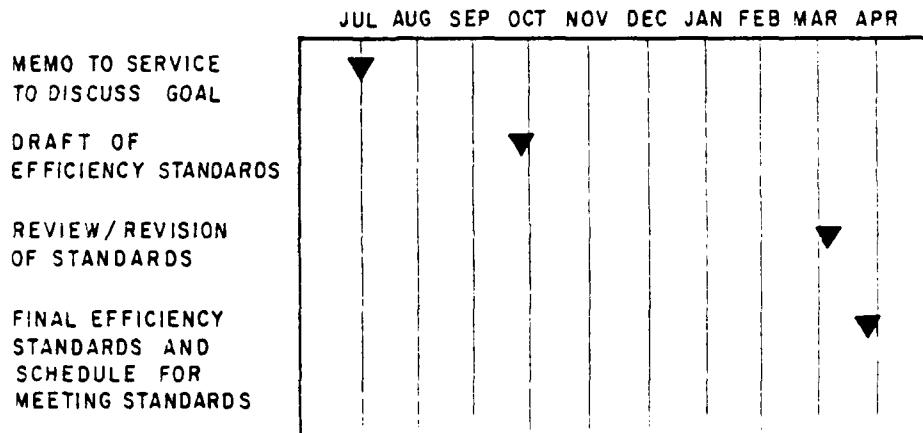


Figure III-11

Goal: Comply with the yearly retrofit requirements of the National Energy Conservation Policy Act (NECPA).

At present the services plan most energy conservation projects by functional area (such as insulation or lighting). These projects (for example to improve the insulation of all housing on the base) are believed to save more energy per dollar invested than projects that would enhance all the energy systems in one building. Currently, however, overall energy savings cannot be attributed to any specific project, nor to individual buildings, because:

- o Less than 1% of DoD buildings are individually metered and

- o It is impossible, even with individual metering, to distinguish between savings achieved through improved equipment, new materials, and modified operating procedures.

So that compliance with National Energy Policy Conservation Act (P.L. 95-619) retrofit requirements can be determined, each military service and defense agency will retrofit existing, owned federal buildings to make them life-cycle cost effective in accordance with the formula and methodology developed by the National Bureau of Standards. Retrofits will be planned on the basis of data derived from the preliminary energy audit, technical surveys, and other appropriate material. Potential projects will be evaluated for energy savings in comparison with estimated cost to ensure effective expenditures. It is estimated that retrofit costs will be about \$5 per square foot.

IV. Joint DoD-DOE Program Efforts

A. Introduction

Enhancing national security and achieving the energy goals of the United States, both in peacetime and in times of national emergency, are important to the nation and are serious joint responsibilities of the Department of Defense (DoD) and the Department of Energy (DOE). The general conditions for DoD-DOE interactions were delineated in an October, 1978, Memorandum of Understanding (MOU) that identified "two basic goals: improving energy efficiency and availability within DoD, and utilizing DoD and DOE expertise and facilities to carry out projects of mutual interest."

There had been considerable interaction between DoD and DOE, including a number of proposed joint initiatives, but a systematic and coordinated approach for nurturing, maintaining, and expanding these relationships has not been formally developed. A DoD-DOE Workshop on Joint Energy Activities was held on March 10-12, 1980, to identify specific programs for inclusion in an overall plan to implement the MOU and to deal with fundamental issues and problems of maintaining and enhancing future communications. This workshop was conducted under the aegis of a joint DoD-DOE policy-level steering committee with the support of an action level integrating group.

The workshop accomplished its goals, these being to:

- o Improve communication among the appropriate key DoD and DOE personnel at all levels and promote information exchange,
- o Review ongoing and already proposed joint DoD and DOE programs,
- o Initiate a coordinated, systematic effort to establish joint DoD-DOE energy security programs, and
- o Propose specific programs and projects of mutual interest for inclusion in a follow-on joint implementation plan.

The general conclusions of the workshop were that:

- o DOE can provide assistance to DoD in carrying out DoD's national security responsibilities.
- o DoD can assist DOE in carrying out its national energy responsibilities.
- o DOE can and will provide current information to DoD on options and techniques that are ready for commercialization.
- o DOE will cooperate with DoD in the planning, execution and reporting of their technology efforts.

- o DoD should provide the resources required for:
 - identifying its energy technology needs and supply requirements,
 - accomplishing the DoD segment of the DoD-DOE energy technologies transfer function,
 - adapting energy technology to defense-peculiar needs and environments, and
 - developing energy technologies peculiar to defense needs.
- o DoD and DOE should jointly seek support for large energy projects that cannot be supported separately or jointly by existing budgets.
- o DoD and DOE should form a comprehensive plan to interact on a continuing basis.

A plan to implement recommended projects and interactions between DoD and DOE is under development. Programs agreed upon at the workshop will be assessed in terms of technical feasibility, costs, environmental and institutional acceptability, commercialization implications, national fuel-availability goals, and timeliness vis-a-vis DoD and DOE needs. An overall plan, including management structures, will be put together, consistent with DoD and DOE technical and funding capabilities.

The workshop was structured into five working groups--Mobility Fuels, Conservation, Fossil Fuels and Fixed Facilities, Solar and Renewable Energy Sources, and Special Projects--with DoD and DOE co-chairmen for each. The participants in these working groups identified issues and discussed numerous possible joint activities.

B. Generic Issues

The workshop identified five issue areas that transcended the focus of any single working group:

1. Substitution of Non-Petroleum Energy Sources for Oil In Federal Facilities

By far the most sweeping program discussed during the workshop was the proposed initiative for reducing the use of oil in Federal facilities.

a. Federal Agencies Fuel Substitution Task (FAST)

The four working groups concerned with fixed facilities--Conservation, Fossil Fuels, Solar and Renewable Energy Sources, and Special Projects--proposed the rapid implementation of a new initiative to reduce DoD and other Federal facilities dependency on oil (generally known as the "oil backout" program). This would be accomplished through new legislative action that would establish a major time-phased program to identify, access, design, and implement the use of cogeneration, coal,

and geothermal technologies to reduce oil consumption. Specifically, the workshop proposal called for a four-phase, six-year program, designated as the Federal Agencies Fuel Substitution Task (FAST), requiring an estimated \$2 to \$4 billion in major facilities funding. The four phases are (1) site studies (\$2 to \$10 million over the first year), (2) technology development and design (\$50 to \$75 million during the second year), (3) construction (during the third through fifth years) and, (4) monitoring and evaluation (\$1 to \$2 million annually on completion of construction). The proposed FAST implementation for 50 to 75 major DoD facilities has the potential of backing-out more than 30,000 barrels of oil per day upon program completion (6 years). Under this proposal, DOE would be appropriated the funds under the President's National Energy Plan III in April 1981. DOE would then transfer a portion of the funds to DoD for engineering implementation of the plan.

The FAST proposal is an ambitious attempt to support goals of national security and oil import reduction in combination with efficiency improvements in power plant technologies. By establishing a separate program, this proposal would allow the Federal government to implement cost-effective fuel conversion measures. Budget limitations impede the implementation of such measures which are not included in the primary mission of either department. In essence, the current decision process for Federal investments places little value on projects that require high front-end capital to allow out-year savings or on projects that use abundant domestic resources in preference to oil and gas. In addition to the direct savings that the program would provide for the Federal budget, significant national benefits would also result since replacing scarce or imported fuels with abundant, domestic fuels can provide significant economic as well as policy impact. As DoD uses 80 percent of all federal energy (and 85 percent of all federal heating oil), its identification as the initial target agency is beneficial in terms of supporting these goals and could lead to a successful oil backout program for all Federal agencies.

2. Institutional Issues

These issues center around organizational and structural problems arising from the need to develop more effective methods of meeting national energy needs and requirements. With regard to funding requests there is an urgent need for both Departments to send a common message forward to both the Office of Management and Budget (OMB) and the Congress. In many areas, the DOE RD&D and DoD energy RDT&E efforts are not integrated. This appears to be based on incomplete definition of the two Departments' missions in energy programs and on differing definitions of what is a proven technology. Specifically, DOE has seen its main role as stimulating the private sector rather than dealing directly with such issues as enhancing implementation of alternate energy sources in Federal facilities. Within DoD, however, following Federal decision criteria has favored investments with low front-end costs (oil and gas) at the expense of low life cycle costs in non-primary mission ventures.

There is a need for a more effective financial and planning structure for carrying out programs of mutual interest within the national policy and goal framework. This issue was common to all working groups and underlines the deficiency that has existed in the past in the total planning and proposal process for Federal programs. Much of the discussion centered on this institutional problem and several significant organizational and operational strategies were suggested, for example, the FAST described above. As part of the implementation planning process, options and recommended approaches to resolve the basic issues will be developed.

3. Budgetary Issues

There is a need for better coordination of budget process activities to more effectively coordinate budget submissions. This coordination should include specific provision for timely consultation and interaction on budgetary items of common interest and agreement on funding responsibilities for joint projects, at both the policy and working levels.

It was further proposed that many of the energy proposals be separated from a Department's unique mission funding proposals. In the case of DoD, this would remove the programs from direct competition with other military construction programs. This "fencing off" of funding should be based on the principles of energy mission support and the national policy of substitution for scarce fuels.

4. Energy Technology Demonstration Centers

It was proposed that the energy conservation showcases, i.e., energy technology demonstration centers, be continued by DoD to test and evaluate innovative energy concepts. Each center would be a focal point of energy expertise and a controlled, centralized demonstration test bed for data collection on a variety of integrated energy technologies. The availability of a carefully controlled environment and a facility that can allow for monitoring and documentation of actual vs. theoretical savings to a system providing the energy services when various alternatives are introduced is strong justification for such an effort. This is especially true where some immediate projects can serve as visible energy conservation models and prove that the government is acting responsibly.

5. Interdepartmental Coordination Improvement

Rather than institutionalizing a new organization, the workshop proposed that the workshop steering committee should become a joint DoD-DOE steering committee for policy issues and that the action level integrating committee be made a permanent group to implement DOE-DoD cooperation.

C. Individual Working Group Findings

Each working group met in its entirety but also divided into individual special topic groups to discuss a number of specific issues and to

identify potential joint activities. Several of the subgroups held joint meetings with subgroups of other working groups to discuss activities of mutual interest. What follows is a summary of the salient findings of each working group and indication of the joint activities agreed to in the working groups. Further detail is provided in the report.

1. Mobility Fuels Working Group Findings

Over 60 percent of the energy needs of the DoD are in the form of fuels for mobile equipment. Over 95 percent of these mobile equipment fuels are middle distillate gas turbine and diesel fuels. The DoD will be reliant on liquid hydrocarbon fuels for the foreseeable future. The DoD, therefore, strongly supports all DOE efforts to expand the domestic supply of mobility fuels, particularly middle distillates. The DOE has the national responsibility for research, development, demonstration and commercialization of technology for fuels supply industry up to the stage of providing finished fuels, as well as general responsibilities to develop a capability to utilize the products of the mobility fuels in industry. The DoD has a responsibility to test those fuels in mobility equipment and to make its current and future requirements and supply concerns for mobility fuels known to the DOE. DOE will consider future DoD requirements and concerns as high priority input to program planning for development of the national mobility fuels supply base. Interaction will range from basic research, through development and demonstration, to industry stimulation.

The principal issues identified were as follows:

- o The national defense requires a coordinated, multifaceted, time-phased plan for an assured supply of mobility fuels to the armed forces, including specific provisions for petroleum allocation to the Department of Defense during national emergencies or energy shortages.
- o DoD will require 200,000 barrels of refined shale oil in 1980-1983 for test and evaluation programs. This translates into approximately 400,000 barrels of crude shale oil. DoD needs assurance that the full program can be met.
- o A critical issue at present is the need to develop a national capability to produce small (batch) quantities of various types of refined fuels of differing quantities from various sources to satisfy these and later test programs.
- o A similar problem will develop for liquid fuels derived from coal. These fuels will become available in the late 1980s from the large pilot plant facilities sponsored by the Fossil Energy Division of DOE. Joint planning for DoD test requirements for this fuel should begin immediately.
- o There is a need for delineation of the relative roles of all the government agencies active in engine systems/fuels development, test, and evaluation to avoid duplication of effort and aid in program coordination.

- o Programs being conducted by several government agencies (DoD, DOE, NASA, etc.) need to be coordinated.

2. Energy Conservation Working Group Findings

The Conservation Working Group divided into eight subgroups to focus on specific issues, and recommended many joint activities ranging across all aspects of the mobility and facility conservation areas. These ranged from R&D through commercialization activities. The eight subgroups and the activities identified in each were:

FACILITY SUBGROUPS

- o Energy Conserving Structures - identified activities concerning data banks, performance standards, research on occupant behavior, and other areas.
- o Energy Monitoring/Control Systems - found mutual interest in the areas of algorithms for models and building performance, system optimization studies and industrial applications.
- o Cogeneration - identified the FAST program and the removal of institutional constraints unique to Federal facilities.
- o Heating, Ventilation, Air Conditioning (HVAC) - found mutual interest in planning and demonstrating new technology.
- o Lighting - identified activities in the areas of technology transfer and field demonstrations.

MOBILITY SUBGROUPS

- o Portable Power Systems - identified the need for stimulated development of advanced engines and fuel cells.
- o Ground Mobile Systems - identified activities concerning the use of smaller engines in a class of DoD vehicles and expanding the DoD role in demonstrating electric and hybrid vehicles.
- o Aircraft/Ship Systems - identified the need for a technology transfer agreement between DoD and DOE, and the need to include other Federal agencies in activities in this area.

3. Fossil Fuels for Fixed Facilities Working Group Findings

This working group, after agreeing on the need for increased coordination of the exchange of technical expertise and information, divided into three subgroups which addressed themselves as follows:

- o The Federal Agencies Fuel Substitution subgroup devoted itself to the FAST issues.
- o The DoD Use of Emerging Technologies subgroup proposed a modest but significant program of multiple unit purchases by DoD of dry

scrubbers, atmospheric fluidized bed combustors, and coal-oil mixtures technologies for DoD use in fixed facilities.

- o The Special Joint Projects subgroup proposed several small component projects for joint activity in the development and use of merging and advanced technologies: fuel cells, Stirling and diesel engines, fluidized bed combustors, advanced gas turbines.

In all, this group identified 26 separate activities.

4. Solar and Renewable Energy Sources (RES) Working Group Findings

The Solar/RES Working Group was divided into three subgroups--Solar, Biomass, and OTEC/Wind/Photovoltaic/MX--in which a tentative list of joint activities were identified as follows:

- o Solar - the highest priority activities were advanced heat engine R&D, ceramic solar Stirling engine development, and SOLCHEM I. Many other activities fell under the Solar in Federal Buildings Program.
- o Biomass - this area included all aspects of wood use, residue collection, and the use of refuse derived fuel.
- o OTEC - three activities; DoD manning of OTEC-1, as well as a study of military applications and hybrid OTEC systems.
- o Wind - the group proposed studies of interference with military communications or radar, and installation of a 400 kw wind generator.
- o Photovoltaics - several activities, most of which are directly applicable to the Federal Photovoltaic Utilization Program.
- o MX/RES - continuation of the current joint DoD-DOE effort.

In all, some 57 activities were discussed. Program initiatives were grouped into three basic areas for evaluation. One for proven technology programs for which funding was the basic need; the second for joint initiatives that reflect technology needs supporting both departments' missions as well as the national policy for oil black-out; and the third for mutual study programs.

5. Special Projects Working Group Findings

The following items were discussed in the Special Projects Working Group:

- o In the area of small-scale hydropower, DoD and DOE agreed that on-going information exchanges are appropriate and adequate.
- o In the area of geothermal, the departments agreed that some DOE assistance to DoD in reservoir confirmation demonstration is appropriate but extensive assistance will require a separate DoD

budget item. In all, eight joint activities were discussed in this subgroup.

- o In the area of energy storage, the Departments agreed that opportunities exist to share each other's test facilities for research, development, and demonstration projects. Eight joint activities were also discussed in this subgroup.

D. General Conclusions

Two distinct sets of proposals emerged from the workshop:

- o One set is a readily implementable modest program of joint activities as described in "Individual Working Group Findings."
- o The other set is a number of major "system-side" proposals in the Government-wide implications that require significant evaluation and coordination before they can be implemented (at least one of these proposals--FAST--may require new legislative action).

Overall, the workshop was very successful. DoD and DOE have crossed a major threshold in communication and understanding of each Department's capabilities, limitations and interests in the energy area. A sound base for continued planning and coordination has been established.

APPENDIX A
DEFENSE ENERGY
EMERGENCY MANAGEMENT SYSTEM

Office, Deputy Assistant Secretary of Defense
(Energy, Environment, and Safety)
Second Draft
August 2, 1979

DEFENSE ENERGY EMERGENCY
MANAGEMENT SYSTEM

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Appendices

CHAPTER I: Introduction

A. Background

The purpose of the defense energy emergency management system (DEEMS) is to assure the availability of fuels to the Department of Defense (DoD) during periods of energy supply disruptions. This plan completes Phase I of the 1979 DoD program to achieve its number one defense energy management priority, fuel supply assurance. Defense Energy Program Policy Memorandum No. 79-5 promulgated the work plan which required the development of this document. Phase II of this one-year effort began in June 1979. We will continue to work with the Department of Energy (DOE) to further develop the DEEMS as necessary and to publish the regulations, policies, and at a minimum, identify those inter-agency agreements which will be necessary to activate the measures needed to deal with fuel disruptions.

The DoD is, overwhelmingly, the largest single user of energy in the federal government, accounting for 80 percent of all federal energy use. The DoD represents about 2 percent of the United States' total energy demand and about 2.5 percent of its petroleum demand. With an annual energy bill which will approach \$9 billion in 1980, the DoD must effectively and efficiently manage its energy resources.

The DoD concern for efficient consumption and reduced energy costs, while important, must remain secondary to the operational readiness of the strategic and tactical forces. Military operational readiness is contingent upon an assured fuel supply. Military forces depend entirely on petroleum to operate their equipment throughout the world. Readiness requires that the weapon systems and support equipment be operated sufficiently to provide adequate

individual and unit training. Readiness also involves preparedness to deploy combat personnel and their weapon systems to trouble spots throughout the world and to perform transportation and supply missions as well. Denial of petroleum products would cripple the readiness capability. The military installations and facilities that support the deployed forces depend on a variety of fuels--petroleum, natural gas, propane/LPG, electricity, coal, purchased steam and hot water, to train and house people, and manufacture, repair, and store military equipment. These are all essential readiness activities. Fuel disruptions that affect military facilities in the United States can disable and cripple our forces which operate throughout the world.

Energy supply disruptions can, as history has already demonstrated, differ as to the fuel(s) involved, severity, duration, location, and impact on the DoD. The petroleum supply problems experienced in 1979 have followed a very lengthy coal strike in 1978 and widespread natural gas shortages in 1977. There is every reason to believe that the recent past portends the near and mid-term future and that a variety of different energy crises should be anticipated.

The objective of the DEEMS, then, is to provide, in a structured, organized manner, the ground rules and mechanisms to deal with the range of likely future fuel disruptions that will almost certainly arise.

B. Summary

The DEEMS is patterned after the Department of Energy's (DOE) Energy Emergency Planning Guide, which the DOE Economic Regulatory Administration published in November 1977. We have altered the format somewhat to be able to address supply problems of all energy resources for any level of supply description. The DEEMS resembles the DOE planning guide because its format and structure are logical and straight forward.

Each chapter that follows presents one element of DEEMS in a building block approach:

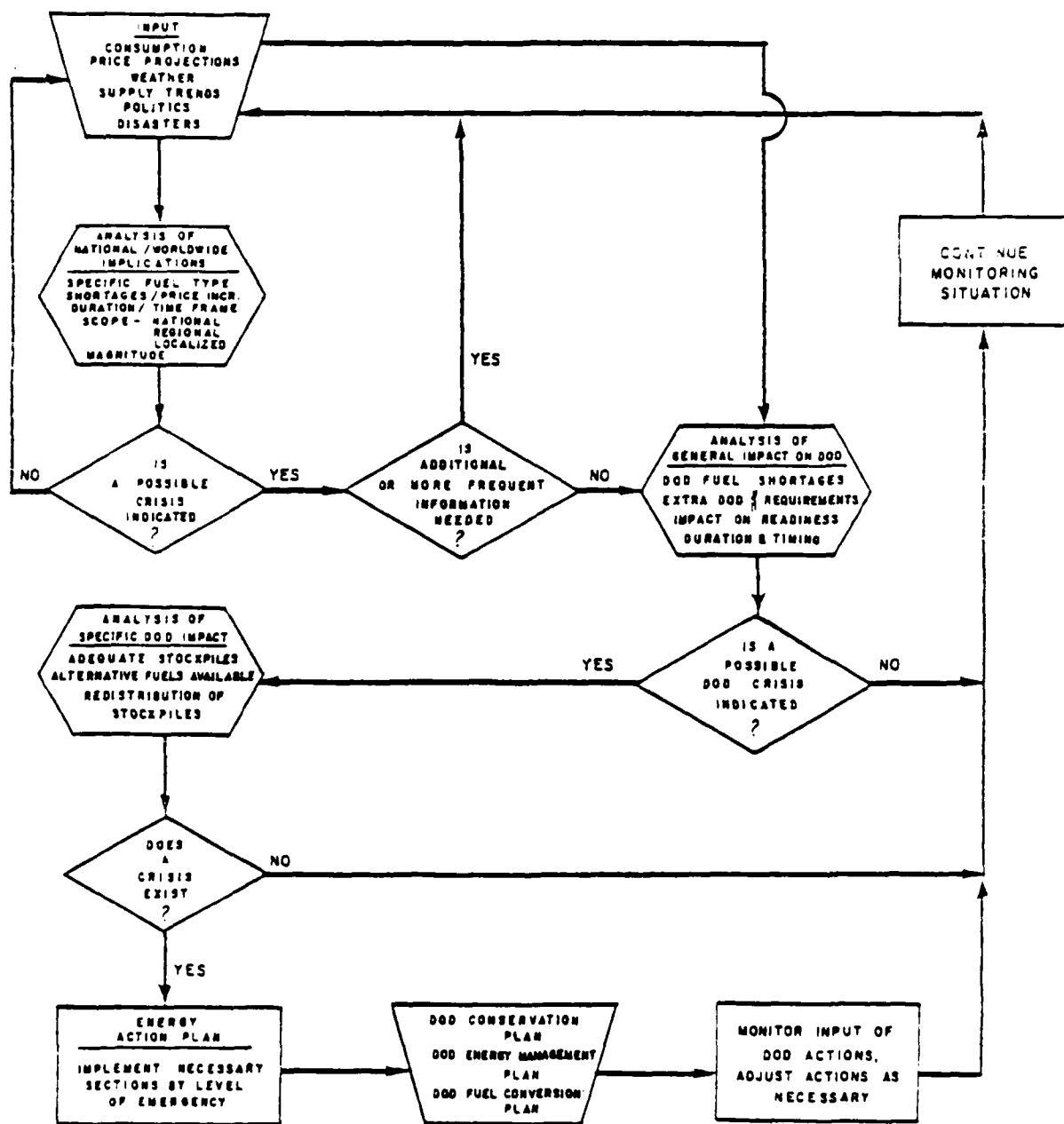
- o Chapter II - Situation Monitoring, outlines the system under which we will evaluate the energy supply situation and emerging energy crises. It provides for the development and exchange of information within the DoD, and with DOE, that is the essential first step to identifying to deal with a fuel supply disruption.
- o Chapter III - Disruption Scenarios, explains the range of scenarios we consider. It contains guidelines to apply specific disruption information, i.e., fuel type, severity, etc., to identify the current DEEMS scenario.
- o Chapter IV - Strategies, combines the disruption scenarios described in Chapter III, with selected management and regulatory actions. These actions are indexed in Chapter V. The result is a step-by-step sequence of measures to deal with the various disruption situations.
- o Chapter V - Inventory of Management and Regulatory Actions, lists the universe of management and regulatory actions which DoD or DOE could take to deal with a disruption situation. The list is indexed to detailed strategies for each action in the preceding chapter.
- o Chapter VI - Procedures to Implement Strategies, details responsibilities, authorities and criteria to implement the actions recommended in Chapter V. Each action is indexed to the scenario(s) to which it applies.
- o Appendices, will be added as necessary to provide copies of laws, regulations, report formats or other useful material as appropriate.

CHAPTER II: Situation Monitoring

DoD must actively monitor world and energy related events to detect situations which may affect DoD's supplies of fuels. This chapter describes the way in which the monitoring should be performed. Two forms of event and trend monitoring are necessary. The first will monitor world events and energy conditions to forecast possible broad trends, such as strikes, political actions, etc. This process is akin to the intelligence gathering processes already in existence. It will necessitate the use of military, political, sociological, economic, intelligence, and technological analyses. The second form will be more closely related to projections of future fuels supply and demand and will tend to be more quantitative. The overall process to be used consists of going progressively from broad energy related conditions to conditions specific to DoD.

Figure 1 is a schematic of the process which DoD will use to monitor conditions and to detect potential energy shortages or crises. The first stage of the process consists of the collection and digestion of information from various sources. This information will then be analyzed to determine if there are related world or national energy implications. If the answer is no, no further analysis is needed and the process may be adjourned. If the answer is yes, the analysis will proceed to determine which specific fuel types will possibly be affected. The fuel types will be identified together with the projected magnitude of shortages and/or price increases. The duration and time frame of the shortages or price increases will be identified as well as the geographic impact, i.e., whether it will have a national, regional, or local

FIGURE -1
DOD PROCESS TO MONITOR ENERGY CONDITIONS
TO DETECT POTENTIAL ENERGY SHORTAGES



effect. From these findings, DoD will then move on to determine the general impact of these world or national changes on DoD's energy situation. Thus, the findings will be used to determine if there will be a DoD fuel crisis or if extra DoD expenditures will be required for fuel. Determinations will be made on readiness impact which the changing conditions will have, the duration and timing which will be associated with the changing conditions and any other features of the situation as they affect DoD. These findings will then be used in the next step of the process to determine which actions if any, DoD should take. This part of the process is discussed in the next section of the report.

The matrix shown in Figure 2 depicts the technique to be used to evaluate both world and DoD energy conditions. A conscious evaluation will be made for each of the dimensions specified along the left side of the figure and an evaluation made about whether the current condition of that dimension will impact any fuels. This matrix will be completed at each intersection or left blank as appropriate. Unusual conditions will be noted at the appropriate intersection. Worldwide energy conditions may be such that a number of the intersections will be filled in, however, it is not necessary that a comment at one of the intersections implies that there will necessarily be any impact on DoD which will require action. Further, it is possible that there will be impacts on DoD which will be noted at the intersections; however, DoD action may not be necessary.

Although DoD will take the initiative to develop and control its energy monitoring and analysis capability, DoD will make the maximum use of the many energy monitoring and analytical tools already in existence.

FIGURE 2. POTENTIAL AFFECTED FUELS BY VARIOUS ENERGY SITUATIONS

ENERGY SITUATION	PETROLEUM		HEATING GAS		NATURAL GAS		COAL		ELECTRICITY		OTHER	
	JP-4	JP-5	DIESEL	MOGAS	OIL							
Military Situation												
Unstable Political Event												
Unusual Demand												
Rapid Price Escalation												
Embargo												
Natural Disaster												
Destruction of Facilities												
Unusual Weather Conditions												
Unusual Industrial Conditions												
Other (Specify)												

The more important of these sources are identified in Table 1. For this reason OSD should make formal approaches to the Joint Chiefs of Staff, the Central Intelligence Agency, the National Security Council, and the Department of Energy to ascertain the degree to which formal monitoring and evaluation processes already exist. It is, for example, our understanding that the CIA already are engaged in a monitoring and evaluation process within the Office of Economic Research, as is the Department of Energy's Assistant Secretary for International Affairs.

A formal exception reporting process will be initiated such that DFSC and each of the military services will be required to report evidence of existing or emerging energy shortages or price trends as they detect them.

Reports from the Department of Energy's Energy Emergency Management Information System (EEMIS) and each of EIA's short-term forecast models will be incorporated formally in the information to be gathered.

OSD will perform a continual and formal review and synthesis of the information available from the above mentioned sources and from other sources and provide a determination when crisis management action for specific fuels is necessary. At the beginning of each month, OSD will issue a prediction of the energy crises that it perceives as being imminent (either long or short term) and will identify the thresholds at which actions will occur and the actions that will be taken.

In each case, where OSD makes a determination that action is necessary, it will identify the fuels that will be affected, estimate the time period over which they believe the problem will exist, and identify the geographic region or regions to which they think the crisis will be limited. DoD will then take the appropriate management action.

TABLE I. POTENTIAL SOURCES OF ENERGY EMERGENCY INFORMATION
(S-Denotes Supply Related, D-Denotes DOD Demand Related)

Organization	Related Responsibility	Type of Information Available	Useful in Analyses of Short Term (Up to 3 Mo's)	Long Term (> 3 Mo's)	Don't Know	Comments
OSD	Sets DOD Energy Policy, DEIS - historical coordinates with MILDEPS and other govt. agencies. Ensures compliance with DOD goals	DEIS - historical DOD energy data Future demands for fuels	D/S	D	D	REPOL is a crisis oriented inventory system
JCS		Future demands for fuels REPOL-short term supply conditions	D	S		
CIA	Forecasting of future international supply and demand conditions worldwide	classified intelligence information and data	S	S		
NSC		Not known if NSC has additional information sources		X		
Dept. of State		Country specific information through attaches, counselors, etc.	S			
DIA		classified intelligence information and data	X			
A-10						

NATO

Information on
European pipeline
system

X

DESC
Fuels
Analysis

Wholesale procurement
and supply of
market conditions

S

Service Energy
Offices

Set service energy
policy, coordinate
with OSB and other
govt. agencies, &
ensures compliance
with goals

D/S

DOE, EIA,
ERMS pro-
ject

DOE's computerized
energy emergency
management infor-
mation system

S

DOE, EIA-
Applied
Analysis

Fuels forecasting
models

S

ERA-Strategic
and cont in-
gency plan-
ning

Not known

Will be in lim-
ited operation in
late 1979. Full
capability not yet
evident

ERA-Fuels
Offices

Regulation and Supply
of individual fuels

S

International Af-
fairs

Fuels intelligence
from other coun-
tries liaison with
with IEA, etc.

S

Market intelligence,
liaison with energy
industry & consumers

S

Political and other
energy related in-
telligence

S

State Energy Offices	Energy management in the states	Many states have good supply and demand monitoring systems	S
Other			S
		Includes industry contacts, trade and other literature, IMI etc.	S

CHAPTER III: Disruption Scenarios

A. Explanation of Disruption Scenarios

Fuel shortages can differ as to:

- Fuels affected,
- Amount of shortfall,
- Geographical extent,
- Duration, and
- Impact on operational readiness.

The scenarios in this section are designed to reflect each of these factors. There is one scenario for each major fuel--petroleum, natural gas, coal, and electricity. The scenarios are divided into four phases. Phase I is a pre-shortage planning phase. The next three phases reflect increasing degrees of severity.

Management and regulatory actions that DoD or others should take are listed in Chapter IV, identified for each phase in Chapter V, and indexed to detailed descriptions in Chapter VI.

We have modified the DOE definitions and response actions that are contained in the DOE Energy Emergency Planning Guide, dated November 1977 for more direct DoD application.

A shortage of one fuel will often lead to increased demand, and hence, some shortages of other fuels. If a severe petroleum shortage causes some degree of shortage in, for example, natural gas and electricity, these secondary impacts should be identified in the situation monitoring activities required in each scenario. To deal with these secondary impacts, follow the steps indicated for the appropriate phase of the specific fuel involved.

B. Explanation of Shortage Phases

The table below defines, in general terms, each phase:

Indicator	Phase			
	I	II	III	IV
Shortfall/Extent: ^{1/}	UNK	<10/L or <5W	>10/L or >5/W	>10/W
Expected Duration:	UNK	<30 days	Indef.	Indef.
Readiness Impact: ^{2/}				
-- Mobility Ops.	0	<10/L or <5/W	>10/L or >5/W	>10/W
-- Facility Ops.	Minor	<20/L or <10/W	20/l or 10W	>20/W

NOTES:

¹ Shortfall is expressed as the percent shortage of fuel to the general economy. DOE will identify this level. Extent is the geographical scope of the problem. "L" means localized, that is, affecting DoD at one or a few specific locations. "W" means widespread, or a shortage that is common to a large area such as the United States or geographical regions of it.

HENCE: 10/L means a 10 percent shortfall in one or several specific locations. 10/W means a 10 percent shortfall throughout, for example, the East and Gulf Coast.

² Readiness impact is expressed the same as total shortfall, above. The readiness impact is DoD's measurement of the impact a fuel shortage is having on military activities. The percentage impact is against:

- Planned operational tempos for mobility activites, and
- Projected consumption for facilities.

The impact indicators for each phase in the table should be used as a guideline, not a firm rule. For example, the responses to deal with Phase II impacts will be adequate if the disruption is known to be one of short duration. As soon as it appears that the shortage could continue indefinitely, escalation to Phase II may be in order. Similarly, the cause of the disruption, and world conditions may dictate actions that are more severe than current shortfalls or readiness impacts would dictate. Response should be flexible depending upon the situation. For example, the response to a petroleum shortage which results from a refinery workers strike in the United States would differ than to a petroleum shortage attendant to a major conflict in the Middle East.

CHAPTER IV: Strategies

The strategies contained in this chapter are the product of matching:

- o The four-phased disruption scenario for each major fuel which is described in Chapter III, and
- o The actions listed in Chapter IV best suited for application in each disruption situation.

The actions usually should be implemented in the order in which they are presented in each of the strategies. The progression of actions begins with the preparatory steps of situation monitoring and stock buildup, and proceeds through increasingly severe measures which culminate in the mandatory allocation of fuels.

The arsenal of regulatory weapons to cope with Phase III and IV emergencies is large, and the choice of the specific actions rests, in virtually every case, with the Department of Energy. For these reasons, DOE regulatory actions are described, in some cases, generically. For example, one action is listed as "Implement mandatory allocation...." Within this, DOE has a range of choices as to how to proceed. The strategies list the range of logical regulatory choices for these phases, roughly in order of increasing severity. The real world circumstances of an actual energy emergency would dictate the DOE choice among the alternative actions.

The right hand column of each strategy is indexed to the section of Chapter V that defines in greater detail, the procedures necessary to implement each action.

A. PETROLEUM

PHASE		ACTIONS	INDEX	PAGE
I Pre-Shortage	DoD	Monitor situation closely Maximize stocks Keep DoE advised	A- 1 A- 2	28
	DoE	Provide status information to DoD Maximize storage levels	B- 2	35
	Other			
II Mild Shortage	DoD	All Phase I actions Direct conservation of non-operational fuels Intensify procurement efforts	A- 4 A- 6	30
	DoE	Same as Phase I Impose federal agency conservation actions Urge private sector voluntary conservation	B- 7 B- 8	30 36
	Other			
III Moderate Shortage	DoD	All Phase I & II actions Establish specific admin. and facility con- servation targets Additional procurement efforts to include re- solicitation & waivers to cost & pricing data Examine possibility of operational fuel use reductions Redistribute stocks as necessary Selective stock drawdowns/redistribution If shortage persists, request DoE to invoke the DPA	A- 3 A- 6 A- 8 A-15 A-10 A-12 C- 7 A-16 C-19	30 28 28 41 32
	DoE	All Phase I & II actions Encourage voluntary allocation & fuel switching actions Explore, and obtain if necessary, waivers to environmental regulations Remove import fees and tariffs Implement product entitlement progress Invoke DPA, if necessary	B-13 B-19 C-14 B-18 B-20 C-19	30 52 33 32
	Other	EPA waive environmental regulations	B-19	

A. PETROLEUM (Continued)

PHASE		ACTIONS	INDEX	PAGE
	DoD	All Phase I, II & III actions Submit essential fuel requirements to DoE Maintain or increase military readiness Support Jones Act waivers, where appropriate	A-14	
IV Severe Shortage	DoE	All Phase I, II & III actions Continue DPA until other measures are in place Implement mandatory conservation programs Establish mandatory refinery yield program Implement mandatory allocation and price controls (incl. gasoline rationing) Require production at emergency rates on federal lands Draw down strategic petroleum reserves Assure that above actions meet DoD requirements	C-19 C- 6 C-13 C- 8 C- 9 C-10 C-11 C-12 C-15 C-17	32 36 51 43 45 47 49 47 53 55
	Other			

B. NATURAL GAS

PHASE		ACTIONS	INDEX	PAGE
I Pre-Shortage	DoD	Monitor situation closely Update DoD natural gas contingency plans Keep DoE advised	A- 1 A- 3	
	DoE	Provide status information to DoD Maximize storage levels Publish natural gas curtailment plan Urge voluntary conservation Encourage fuel switching Help states develop contingency plans	B- 2 C-20 B- 8 B-13 B-16	35 56 36 30 36
	Other			
	DoD	Phase I plus: Impose natural gas conservation actions and approve switching to alternate fuel where possible	A-13	
		Alert DoE/FERC/ERA as appropriate on readi- ness impact and overall impact		
	DoE	Phase I plus: Impose federal conservation actions Accelerate production from federal leases Ban outdoor gas lights Authorize imports of LNG	C-24	53
II Mild Shortage	Other	FEMA: NG monitoring (industrial preparedness impact)		
	DoD	Phase I and II plus: Approve waiver of Jones Act as necessary Intensify monitoring Jawbone NG distribution Present requirements to appropriate state regulators	A- 1 A- 7	32
	DoE	Phases I and II plus: Approve emergency import applications Work with state govt's & utilities on DoD's behalf Reallocate federal royalty gas Initiate waiver of Jones Act as necessary Require fuel switching in utilities Require conservation actions in the private sector Jawbone DoD NG distributors	C-23 B-11 B-13 B- 8 B-10	59 30 36

B. NATURAL GAS (Continued)

PHASE		ACTIONS	INDEX	PAGE
III Moderate Shortage (continued)	Other	President prohibits use of NG as a boiler fuel President declares NG emergency President approves emergency purchase authority (interstate/intrastate sales)	C-22 C-21 C-25	54 58
	DoD	Phases I, II & III plus: Request invocation of Defense Production Act for essential requirements	C-27	32
IV Severe Shortage	DoE	Phases I, II & III plus: Approve DPA for DoD essential requirements Preempt reserve gas in OCS	C-27	32
	Other	President: emergency allocation of NG	C-26	60

C. ELECTRICITY

PHASE		ACTIONS	INDEX	PAGE
I Pre-Shortage	DoD	Monitor situation Exhort conservation of electricity Update installations' specific contingency plans Keep DoE advised	A- 1 A- 3 A- 4	30
	DoE	Monitor situation Advise DoD prognosis	B- 1 B- 4	
	Other			
II	DoD	Phase I plus: Mandate electric consumption reduction Alert DoE of DoD critical needs	A- 3	
	DoE	Phase I plus: Urge voluntary conservation in private sector Implement federal agency demand restraint program	B- 8 B- 7	36 30
	Other			
III Moderate Shortage	DoD	Phases I & II plus: Assess readiness impact of shortages Relocate emergency generating equipment as required	A-13 A- 5	
	DoE	Phases I & II plus: Encourage power wheeling between regions/ grids Seek waivers to burn dirtier fuel at power plants (i.e., higher sulphur coal) International initiatives (i.e., Canadian purchases) Prohibit/authorize NG as a boiler fuel as appropriate	B-14 C- 1 B-21 C-22	38 39 54
	Other			
	DoD	Phases I, II & III plus: Request DPA for essential DoD requirements	C-19	32

C. ELECTRICITY (Continued)

PHASE		ACTIONS	INDEX	PAGE
IV Severe Shortage	DoE	Phases I, II & III plus: Require power wheeling between regions/grids Invoke DPA for DoD essential requirements	C- 2	38
	Other	President: Suspend provisions of Clean Air Act	C- 3	32
			C- 1	

D. COAL

PHASE		ACTIONS	INDEX	PAGE
I Pre-Shortage	DoD	Monitor Situation Maximize stocks Exhort conservation	A- 1 A- 2	
	DoE	Monitor situation Maximize stocks Exhort conservation	B- 1 B- 2	35
	Other			
II Mild Shortage	DoD	Phase I plus: Resolicit procurements Jawbone suppliers Encourage fuel switching	A- 6 A- 7	32
	DoE	Phase I plus: Jawbone suppliers on DoD's behalf Implement federal demand restraint program Encourage fuel switching	B-10 B- 7 B-13	30 30
	Other			
III Moderate Shortage	DoD	Phases I & II plus: Approve waiver of Jones Act as appropriate Assess readiness impact Redistribute DoD stocks	A-13 A-10	28
	DoE	Phases I & II plus: Initiate action to waive Jones Act Request waiver of environmental constraints Require conservation measures in private sector	B-19 B- 8	36
	Other			
IV Severe Shortage	DoD	Phases I, II & III plus: Request conservation of Defense Production Act for essential DoD requirements Redistribute stocks	C- 4 A-10	32 28
	DoE	Phases I, II & III plus: Invoke DPA for essential DoD requirements Require fuel switching in utilities Authorize natural gas and boiler fuel	C- 4 B-13	32 30
		President: Allocate coal	C- 5	40

CHAPTER V: Inventory of Management and Regulatory Actions

A. DoD Management Actions*

<u>Index</u>	<u>Page</u>	<u>Emergency Action</u>	<u>Authority</u>	<u>Organization to Implement</u>
A- 1		Monitor situation		OSD, Mil Depts & DLA/DFSC
A- 2	28	Maximize stock levels	DoDD 4140.25	DFSC, Mil Depts
A- 3		Update installation contingency plans	DoDD 4170.10	Mil Depts
A- 4	30	Mandate specific conservation targets for non-operational energy	DoDD 4170.10	OSD
A- 5		Redistribute emergency generating equipment		Mil Depts
A- 6*		Resolicit procurements		Mil Depts (PCS)
A- 7	32	Communicate directly with Senior Supplies Officials (Jawbone suppliers--orally and in writing)		DFSC
A- 8*		Obtain/authorize cost and pricing waivers	DoDD 4140.25	DLA, OSD
A- 9		Alert DoE/ERA		OSD
A-10	28	Redistribute stocks		Mil Depts, DFSC
A-11	39	International initiatives (NATO)		OSD
A-12	28	Drawdown stocks		Mil Depts, DFSC
A-13		Assess readiness impact of reduced mobile operations		Mil Depts, JCS
A-14		Decision to request formal regulatory action		OSD
A-15	30	Limit use of operational fuels		Mil Depts
A-16		Drawdown of protectable stocks		Mil Depts, DFSC

*Actions which require detailed procedures and authority (see Chapter VI).

B. DoE Management Actions

<u>Index</u>	<u>Page</u>	<u>Emergency Action</u>	<u>Authority</u>	<u>Organization to Implement</u>
B- 1		Monitor situation		
B- 2	35	Maximize storage		
B- 3	36	Intensify fuel situation monitoring		
B- 4		Advise DoD prognosis of situation (continue with follow-up progress reports)		
B- 5*	37	Increase Elk Hills production		
B- 6*		Accelerate development/production from federal leases		
B- 7*	30	Implement federal agency demand restraint program		
B- 8	36	Urge voluntary conservation in the private sector		
B- 9	32	Encourage voluntary allocations to priority users		
B-10		Communicate directly with Senior officials of DoD Suppliers (Jawbone DoD suppliers)		
B-11		Work with state governments, public utility commissions, and utilities on DoD's behalf		
B-12*	51	Encourage/require refineries to switch yields		
B-13*	30	Encourage/require fuel switching in utilities		
B-14*	38	Encourage/require power wheeling		
B-15	38	Encourage development and implementation of state operated fuel exchange programs		

*Actions which require detailed procedures and authority (see Chapter VI).

B. DoE Management Actions (Continued)

<u>Index</u>	<u>Page</u>	<u>Emergency Action</u>	<u>Authority</u>	<u>Organization to Implement</u>
B-16	36	Assist states, public utility commissions, and utilities to develop contingency plans		
B-17		Draft additional regulations and legislation as needed		
B-18		Recommend the President lift import fees and duties		
B-19		Seek waivers to environmental constraints from EPA		
B-20*	33	Invoke the Defense Production Act		
B-21	39	International initiatives (IEA)		

C. Regulatory Actions

ELECTRICITY

C- 1*		Suspend Clean Air Act to allow use of more environmentally unacceptable boiler fuels	PL 95-95	The President
C- 2*	38	Mandate system/grid inter-connects, order electric transfers (wheeling) and allow construction of temporary facilities	Federal Power Act Section 202	DoE/ERA
C- 3*	32	Invoke DPA	DPA	DoE

COAL

C- 4*	32	Invoke DPA	DPA	DoE
C- 5*	40	Allocate coal	PL 95-620 IV, 404	The President

PETROLEUM

C- 6*	36	Implement emergency conservation plans	PL 93-163 203(a)(1)	DoE/ERA
C- 7*	41	Require adjustment of industry stocks either by distribution or increase	PL 93-139 15	DoE/ERA

*Actions which require detailed procedures and authority (see Chapter VI).

C. Regulatory Actions (Continued)

<u>Index</u>	<u>Page</u>	<u>Emergency Actions</u>	<u>Authority</u>	<u>Organization to Implement</u>
<u>PETROLEUM</u>				
C- 8*	43	Impose price controls	PL 93-159	DoE/ERA
C- 9*	45	Allocate or redirect crude oil	PL 93-159 PL 94-163 PL 93-275	DoE/ERA
C-10*	47	Control petroleum products	PL 93-159	DoE/ERA
C-11*	49	Decontrol petroleum products	PL 93-159	DoE/ERA
C-12*	47	Allocate or redirect SNG feedstocks	PL 93-159	DoE/ERA
C-13*	51	Issue refinery yield orders	PL 93-159 PL 94-163	DoE/ERA
C-14	52	Collect oil import fees, monitor import volumes	PL 93-159	DoE/ERA
C-15	53	Require production at emergency rates on federal lands	PL 94-163	The President
C-16*	54	Prohibit use of petroleum as a boiler fuel	PL 95-620	The President
C-17	55	Drawdown of SPR	PL 94-163	DoE
C-18*	36	Ration gasoline	PL 94-163	DoE/ERA
C-19*	32	Invoke DPA	DPA	DoE
<u>NATURAL GAS</u>				
C-20	56	Establish natural gas curtailment plans	PL 95-621 IV, 401-402	DoE
C-21*	58	President's declaration of natural gas emergency	PL 95-621 III, 301	The President
C-22*	54	Prohibit natural gas use as a boiler fuel	PL 95-620	The President

*Actions which require detailed procedures and authority (see Chapter VI).

NATURAL GAS (Continued)

<u>Index</u>	<u>Page</u>	<u>Emergency Action</u>	<u>Authority</u>	<u>Organization to Implement</u>
C-23	59	Approve emergency import applications	PL 75-688 Sec. 3	DoE/ERA
C-24	53	Require emergency production rate on federal lands	PL 94-163 Sec. 105	The President
C-25*		Approve emergency purchase authority (inter-intrastate sales)	PL 95-621 III, 302	The President
C-26*	60	Emergency allocation of natural gas	PL 95-621 III, 303	The President
C-27*	32	DPA invocation	DPA	DoE

*Actions which require detailed procedures and authority (see Chapter VI).

CHAPTER VI: Procedures to Implement Strategies*

This chapter contains detailed instructions to implement the various actions identified in the preceding two chapters. Most of this chapter is devoted to regulatory actions. Many of the DoD and DoE management actions are a matter of standard operating procedure and do not need to be detailed. DoD management action Index A-1 "monitor situation" is a good example. The market analysis of petroleum product availability and price escalations is a normal monitoring function of the Defense Fuel Supply Center's management process. DoE management actions need to be completed, however. Each action is numbered and cross-referenced to specific Chapter V strategies. The numbering scheme is:

<u>Action Number</u>	<u>Type Action</u>
A-1 to A-16	DoD Management Actions
B-1 to B-21	DoE Management Actions
C-1 to C-27	Regulatory Actions

*Additional pages for specific actions may be necessary, however. Suggestions as to additions, format, and content are invited.

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Adjustment of Industry Stocks

PURPOSE: To require adjustment of industry stocks either by distribution or increase.

AUTHORITY: Emergency Petroleum Allocation Act of 1973.

PROCEDURES: Standby authorities governing inventory levels and distributions of stocks become activated if the international crude oil allocation provisions of the agreement on an International Energy Program take effect (unless the Secretary of Energy decides otherwise or at any time by the ERA administrator. The standby authorities pertaining to industry stocks require that:

- o the supplier first meets customer obligations not subject to an allocation fraction,
- o The suppliers are the obligated to supply base period customers up to an ERA imposed maximum allocation fraction. The allocation fraction is the quotient of remaining supply divided by obligations subject to an allocation fraction (base period customers), or any other fraction imposed by the ERA administrator,
- o Excess product - the difference between the maximum allocable supply and the available supply would have to be held in inventory until a supplier had stored up to 90 days peak supply or reached his maximum storage capacity,

Adjustment of Industry Stocks
(con'd)

- o Any excess product remaining after meeting 90-day supply levels and/or reaching maximum storage levels is subject to redirection by the administrator to a supplier unable to meet its supply obligations even with the imposed fraction. If not redirected it may be used to bring the supplier's base period supply obligations up to the point where the allocation fraction is 1.0, and
- o The product remaining after supply and inventory obligations have been met -- can be distributed at the discretion of the supplier subject to certain limitations and provided that the amount is not redirected by the administrator within 5 days of ERA's notification of the surplus.

DoD ACTION: None.

DOE ACTION: DOE shall impose mandatory allocation fractions either nationwide or selected geographical areas if it feels that this is necessary for the objectives of the EPAA.

DOE shall reimpose controls on petroleum products previously exempt from price or allocation regulations if such measures are necessary to restrain abrupt drawdowns of some or all petroleum products found to be in short supply.

These regulations are to become effective before gasoline rationing programs are implemented.

Index A- 4
A-15
B- 7
B-13

Emergency Conservation Plans

PURPOSE: To mandate specific emergency conservation procedures during energy emergencies.

AUTHORITY: Energy Policy and Conservation Act (EPCA) of 1975 (P.L. 94-163).

PROCEDURES: The President has standby authority to direct the implementation of energy conservation plans to restrict public and/or private use of energy. Plans which the President may implement cover:

- o Determining allocation priorities among competing requests from both public and private sectors for scarce, critical and essential fuel supplies as defined in EPCA Section 104,
- o Prohibiting the use of natural gas or oil in major fuel burning installations necessitating conversion to coal,
- o Setting minimum or maximum temperatures in federal buildings,
- o Rationing motor gasoline,
- o Parking management and carpool incentives, and
- o Other mandatory conservation actions aimed at reducing public and private demand for energy.

DoD ACTION: Secretary of Defense promulgates the President's emergency conservation plans so as to not adversely impact operational readiness.

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A-15
B- 7
B-13

Emergency Conservation Plans
(Con'd)

Secretary of Defense reports to DOE any shortages of fuel which degrade operational readiness resulting from implementation of the priority performance of contracts or orders to meet federal conservation objectives during energy crises.

Military departments and defense agencies implement energy conservation measures and monitor their impact upon readiness.

DOE ACTION: Secretary of Energy recommends Congressional approval to implement emergency conservation plans which the EPCA authorizes.

Index A- 7
B- 9
C- 3
C- 4
C-19
C-27

Defense Priority Over Materials and Energy Supplies

PURPOSE: To allocate scarce and critical materials and domestic energy supplies deemed necessary to promote the national defense.

AUTHORITY: Defense Production Act of 1950, Title I, Section 2071.

PROCEDURES: The President is authorized to require that capable suppliers accept and perform contracts (other than contracts of employment) which he deems as necessary to promote the national defense, and to allocate such materials and facilities as he deems necessary for this purpose.

DoD ACTION: Notify DOE of shortfalls in critical or scarce supplies and energy products. Request DOE invocation of the Defense Production Act (DPA).

DOE ACTION: Invoke the DPA. To exercise this authority the DOE Secretary must find that such supplies are scarce, critical and essential and would not be forthcoming without the exercise of this authority.

Priority Delivery of Coal

PURPOSE: To establish procedures to invoke the Defense Production Act (DPA) to require the priority delivery fo coal to the Department of Defense (DoD).

AUTHORITY: Defense Production Act of 1950, as amended (50 U.S.C. App. 2071). Federal Energy Administration Act of 1974 (P.L. 93-275). Executive Order 11790, Providing for the Effectuation of the FEA Act of 1974.

PROCEDURES: DoD will notify the Department of Energy (DOE) that a serious coal supply disruption has occurred which adversely impacts the DoD capability to ensure the national security. Thorough documentation of DoD's case must be made. It should include as a minimum:

- o Chronological narrative description of DoD's unsuccessful coal procurement actions,
- o Coal conservation measures undertaken,
- o Feasibility of and actual coal stock redistribution,
- o Utilization of alternate energy sources, and
- o Mission impact of coal supply disruption.

DoD ACTION: Military Departments and Defense Logistics Agency document actions outlined in procedures (listed above). Secretary of Defense notifies Secretary of Energy. DOE Economic Regulatory Administration evaluates DoD DPA notification. Secretary of Energy approves DPA invocation.

Priority Delivery of Coal
(Con'd)

DOE ACTION: DOE may order a person to:

- o Supply DoD coal that meets DoD's specifications (quality and quantity), and
- o Provide DoD coal in excess of requirements.

Maximize Storage

PURPOSE: To restrain abrupt inventory drawdowns in shortage situations so as to allow for an equitable distribution of available supplies over a longer period of time.

AUTHORITY: Emergency Petroleum Allocation Act (EPAA) (PL 93-159) Section 15.

PROCEDURES: The ERA Administrator can at any time mandate national or regional maximum allocation fractions on some or all products and order that any excess product be stored to the suppliers maximum storage capability or until it accumulates to an amount equal to 90 days peak supply with respect to purchasers the supplier has obligations to. The Administrator's actions can occur without congressional or executive approval.

These provisions will also be activated when the IEA terms come into force--when energy consumption for a participating country falls by 7 percent.

DOL ACTION: None.

DOE ACTION: Monitor the drawdown of industry stocks and project future demand and supply.

Index B- 3
B- 8
B-16
C- 6
C-18

Implement Conservation Initiatives

PURPOSE: To encourage conservation in public and private sector, voluntary or otherwise.

AUTHORITY: Energy Policy and Conservation Act (EPCA) (PL 94-163), Title III, Section 202.

PROCEDURE: President sets conservation goals and requires states to have conservation contingency plans in place. The plans should impose restrictions on public and private uses of energy.

DoD ACTION: Prepare and/or update contingency conservation plans.

DOE ACTION: Monitor and coordinate contingency plans for the states and political subdivisions. Plans can be implemented when Economic Regulatory Administration Administrator has declared a crisis exists.

Increase Naval Petroleum Reserves Production

PURPOSE: To increase Elk Hills Production.

AUTHORITY: Naval Petroleum Reserves Production Act of 1976, Title II

PROCEDURE: The Secretary of DOE, with the approval of the President, is authorized to produce from Elk Hills at a maximum efficient rate consistent with sound engineering for a period of six years. The President may extend the six-year production period but only by three years maximum at any one time. Elk Hills pipeline capacity is planned to reach 350,000 barrels per day.

DoD ACTION: None.

DOE ACTION: Secretary has authority to further explore, develop and produce from the reserves to the extent necessary for national defense purposes.

Interconnection and Coordination of Electric Production Facilities

PURPOSE: To mandate system/grid inter-connect, order wheeling and allow construction of temporary facilities to assure an abundant supply of electric energy throughout the U. S.

AUTHORITY: Federal Power Act Section 202.

PROCEDURES:

DoD ACTION: None.

DOE ACTION:

Implement International Initiatives

PURPOSE: To take actions necessary to fulfill U. S. obligations under the international energy program.

AUTHORITY: Energy Policy and Conservation Act (PL 94-163) Section 251.

PROCEDURES: The President must first find that such action is required to fulfill U. S. international energy program obligations and declare an emergency. The DOE Administrator has authority under Executive Order 11912 to reallocate or order actions concerning any crude or products being produced, transported, refined, distributed or stored by any person subject to the jurisdiction of the United States in such amounts and at such prices as are specified by such a rule. The rule by the Administrator specifies shall remain in effect for 12 months.

DoD ACTION: Monitor supplies of defense contractors and solicit priority allocation from DOE as needed.

DOE ACTION: ERA could order a U. S. oil company to sell petroleum to a foreign buyer or participating country according to standby allocation rules issued May 14, 1979, (44 F.R. 27969).

Allocate or Redirect Coal

PURPOSE: To allocate coal (and require the transportation thereof) for the use of any electric power plant or major fuel -- burning installation to avert major adverse impacts resulting from an interruption in the coal supply.

AUTHORITY: Powerplant and Industrial Fuel Use Act of 1978 (P.L. 95-620), Title IV, Section 404.

PROCEDURE: The President declares a severe energy supply interruption or finds and publishes such finding that a significant national or regional fuel supply shortage exists or is imminent. Any electric power plant or major fuel -- burning installation may be prohibited from using natural gas and/or petroleum. As a primary energy source unless an exemption is granted by the DOE Secretary. Any order issued under Section 404 shall remain effective throughout the emergency or for 90 days, whichever is less.

DoD ACTION: Monitor military power plant facilities and solicit Clean Air Act suspensions as necessary and/or exemption from the requirements of this act, whichever is deemed necessary.

DOE ACTION: The authority of the President under Section 404 cannot be delegated to DOE although DOE may draw up rules and regulations in the implementation of any Presidential order under this Act.

Implement Inventory Controls

PURPOSE: To require the adjustment of industrial stocks, either by the distribution of stocks or by increasing stocks as a result of an existing or impending supply shortage of any fuel.

AUTHORITY: Emergency Petroleum Allocation Act of 1973 (PL 93-159) Section 15.

PROCEDURES: The President may, if he finds an existing or impending regional or national supply shortage of any fuel, require adjustments in the amount of crude oil, residual fuel oil or any refined petroleum products which are held in inventory by persons who are engaged in the business of importing, producing, refining, marketing, or distributing such oils or products. The authority may be exercised through:

- o A distribution from such inventories to specified persons or classes of persons at specified rates of distribution or level of inventory accumulation or,
- o The accumulation of inventories at specific rates of accumulation or to specified levels.

DoD ACTIONS: DoD must make a determination that the use of inventory control is in keeping with the intention of Section 4(B)(1) of the EPAA where the national defense is concerned. DoD would then notify DOE of reasons for requesting this action in a well documented manner citing actions taken to minimize any disruption and all other alternative actions.

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Implement Inventory Controls
(Con'd)

DOE ACTION: DOE approves DoD action and forwards the request to the President for approval.

Price Controls

PURPOSE: To impose mandatory price controls during emergency energy shortages to supercede those already in effect at the onset of the activation of standby authorities.

AUTHORITY: Emergency Petroleum Allocation Act (EPAA) of 1973 (P.L. 93-159)

PROCEDURE: The authority here becomes effective on any or all products when controls are imposed on any product previously exempted from mandatory price and allocation rules.

Cost pass throughs of unrecouped costs incurred prior to the day this regulation is imposed shall not, in general, be recouped while this regulation is in effect unless the administrator decides otherwise.

Resellers or retailers may not charge end-users an amount which exceeds the weighted average of the lawful prices plus a dollar for dollar additional price reflecting product cost increased subsequent to the date controls are imposed, plus an amount, set by the administrator, to reflect increased non-product costs.

DoD ACTION: None.

DOE ACTION: ERA shall determine the weighted average of lawful prices for each class of purchaser for the specified products.

The administrator shall also establish adjustments to reflect increased non-product cost incurred subsequent to the base period.

Price Controls
(Con'd)

The administrator may determine the extent to which unrecouped costs incurred prior to the reimposition of controls can be recouped for certain products.

Allocate Crude Oil

PURPOSE: To allocate crude oil to refiners at the national utilization rate so as to ensure that available crude oil be distributed equitably among refiners during critical shortages in order to mitigate the adverse economic effects of shortages.

AUTHORITY: Emergency Petroleum Allocation Act (EPAA) of 1973 (P.L. 93-159).

PROCEDURE: The administrator of ERA would implement a crude oil buy/sell program similar to the entitlements program currently in effect for small refiners.

The administrator would have the authority to implement the standby regulations in phases depending upon the severity of the shortage. These phases could include:

- o Extending the present buy/sell (entitlements) program to include any refiner with a demonstrated shortfall in crude supplies rather than just small and independent refiners,
- o Implementing standby regulations only for major and large independent refiners and continue to use entitlements for small refiners, and
- o Implementing the standby program such that it completely replaces current regulations and allocates available supplies to all refiners.

Refiners would be entitled to purchase sufficient crude oil to permit operation of their refineries at the national utilization rate, as the administrator determines and also be obligated to

Allocate Crude Oil
(Con'd)

sell any crude that would permit operation in excess of this rate.

Refiners with capacity of 50 thousand barrels per day and otherwise subject to sales obligations if the total reduction in U.S. crude supplies, as determined by ERA, is 7 percent or less.

DOD ACTION: None.

DOE ACTION: DOE shall assess the severity of the crude oil shortage to determine to what extent the standby authority will be applied. The ERA shall compute the national utilization rate to be used in determining the purchase rights or sale obligations of refiners.

Allocate or Redirect Controlled Petroleum Products

PURPOSE: To provide for the mandatory allocation of crude oil, residual fuel oil, and each refined petroleum product.

AUTHORITY: Emergency Petroleum Allocation Act of 1973 (PL 93-159) Section 4.

PROCEDURES: The President may invoke mandatory allocation of controlled products when any of the following are being threatened due to energy shortages:

- o The protection of public health, safety, and welfare, and the national defense
- o The maintenance of all public services
- o The maintenance of agricultural operations
- o The preservation of an economically sound and competitive petroleum industry, including the preservation of the competitive liability of the small independent refiners
- o The equitable distribution of crude oil, residual fuel oil, and refined petroleum products at equitable prices among all regions and areas of the U. S. and sectors of the petroleum industry. The allocation of suitable types, grades, and quality of crude oil to refineries in the U.S. to permit such refineries to operate at fuel capacity maybe ordered and the refined products may then be allocated among end users.

Allocate or Redirect Controlled Petroleum Products
(Con'd)

DoD ACTION: Presently, there are only three controlled products--residual heating oil, motor gasoline, and synthetic natural gas (SNG) feedstocks.

In the event of a severe shortage of these two products, DoD can request DOE to recommend to the President to invoke the Mandatory Allocation Regulations. Detailed documentation should be cited by DoD.

DOE ACTION: Upon written request from DoD, DOE will make determination if this action is necessary. If so, DOE will forward recommendation to the President for action.

Allocate or Redirect De-Controlled Petroleum Products

PURPOSE: To provide for the mandatory allocation of previously controlled petroleum products.

AUTHORITY: Emergency Petroleum Allocation Act of 1973 (P.L. 93-159) Section 4.

PROCEDURES: The ERA Administrator may at anytime reimpose controls on residual fuel oil, middle distillates, naphthas, gas oils, jet fuels, natural gas liquids, aviation gasoline and other previously controlled petroleum products. These controls would most likely be called into effect when:

- o The International Energy Agreement (IEA) "trigger" mechanisms are activated -- a 7 percent drop in member countries' total oil consumption,
- o There is a selective embargo causing at least a 7 percent drop in a member country's consumption during a particular period, and
- o When it is evident that reimposition of controls is necessary to achieve the objectives of Section 4(b)(1) of the EPAA.

These standby regulations may supercede any regulation already in effect for currently controlled products such as gasoline.

The imposition of controls could involve:

- o National or regional allocation fractions for base period supplier/customer relationships,

Allocate or Redirect De-Controlled Petroleum Products
(Con'd)

- o The determination of a new base period,
- o Requirements that suppliers store product in inventory, and
- o Limitation of utility and refinery fuel uses of kerosene base jet fuels, middle distillates and residual fuel oil.

The controls could be used in any combination on either a regional or national basis for a period not later than the last day of the third full month after controls are imposed unless otherwise ordered by the Administrator of ERA.

DoD ACTION: Monitor the fulfillment of contracts by defense suppliers and report to the DOE if shortfalls are evident or imminent. Should DoD supplier exemption from controls be necessary or should special considerations for defense suppliers become imperative for military readiness demands, the DoD should play an active role in documenting the situation and pursuing priority allocations on behalf of defense contractors.

DOE ACTION: Upon written requests from DoD or defense contractors, the ERA administrator shall first determine if the situation warrants special treatment and then determine to what extent mandatory stand-by controls or exemption from controls will be imposed.

Issue Refinery Yield Orders

PURPOSE: To require refiners to produce certain petroleum products found to be in short supply either regionally or nationally.

AUTHORITY: Emergency Petroleum Allocation Act of 1973 (PL 93-159) Section 14, and Energy Policy and Conservation Act of 1975 (PL 94-163) Section 457.

PROCEDURES: DoD will notify DOE that a serious specific petroleum product shortfall exists that impacts DoD's capability to ensure the national security. DOE will notify the President. The President may require the adjustment in the operations of any refinery in the United States with respect to the proportions of residual fuel oil or any refined petroleum product produced through such operations.

DoD ACTION: Notify DOE of shortfall of specific fuel in a well documented manner citing actions already taken to minimize the impact of the disruption and all alternative solutions to the problem.

DOE ACTION: DOE approves DoD action and forwards request to the President.

Collect Import Fees

PURPOSE: To monitor import volumes into the United States and its territories and to charge license fees to discourage such imports.

AUTHORITY: Presidential Proclamation on Oil Imports (January 3, 1976) as it amends Presidential Proclamation 3279.

PROCEDURE: all import tariffs were suspended and a system of license fees imposed on those imports exceeding the maximum level of imports, from sources other than Canada and Mexico, as defined for each district of the U.S. and its possessions. Oil imported for the Strategic Petroleum Reserve is exempt for license fees and is not included in the allocations for each district for each district. License fees maybe adjusted by the Administrator of DOE so as to encourage domestic production for national security and to increase domestic refinery capacity by limiting the importation of finished products.

DoD ACTION: Reduced license fees may be obtained for the importation of finished petroleum products used by DoD.

DOE ACTION: The Administrator of the DOE is responsible for the collection of fees and promulgating regulations concerning exemptions and eligibility for reduced fees.

Maximize Production of Oil or Gas on Public or Private Lands

PURPOSE: To order maximum production of crude oil on private or public lands except the Naval Petroleum Reserve lands.

AUTHORITY: Energy Policy and Conservation Act (EPCA) of 1975 (P.L. 94-163).

PROCEDURE: The President may order crude oil production at a maximum efficient rate on Federal lands designated by him during a severe energy supply interruption.

The President may require production of oil and/or gas at a maximum efficient rate (as determined by each state or appropriate agency having jurisdiction) on a field other than on Federal lands during a severe supply disruption.

DoD ACTION: None.

DOE ACTION: DOE shall determine the maximum efficient rate or maximum temporary emergency rate of production for those fields composed of both Federal and non-Federal lands for which no determination of maximum efficient rate has been made.

Prohibit the Use of Petroleum and Natural Gas
as a Boiler Fuel in an Existing Facility

PURPOSE: To prevent the use of petroleum or natural gas in existing facilities that have alternative fuel capability.

AUTHORITY: Power plant and Industrial Fuel Use Act of 1978 (PL 95-620)
Title III, Section 302.

PROCEDURES: The Secretary of Energy May prohibit the use of petroleum or natural gas, or both, as a primary energy source in any existing major fuel burning installation, if he finds that:

- o Such installation has or previously had the technical capability to use coal or another alternate fuel as a primary energy source.
- o Such installation has the technical capability to use coal or another alternate fuel as a primary energy source, or it could have such capability without a substantial physical modification of the unit or a substantial reduction in the rated capacity of the unit.
- o It is a financially feasible to use coal or another fuel as a primary energy source in such an installation.

DoD ACTION: DoD must be aware of the provision of the act so that appropriate planning takes place and DoD is prepared if the provisions of this act are invoked.

DOE ACTION: The Secretary of Energy is responsible, by rule, to carry out provisions of this act.

Drawdown of Strategic Petroleum Reserves

PURPOSE: To drawdown strategic reserves of crude or petroleum products.

AUTHORITY: Energy Policy and Conservation Act (EPCA) of 1975 Title I, Part B.

PROCEDURE: Definitive procedures for the drawdown of the reserves have to date not been published. Currently there are over 87 million barrels of crude stored. Temporary drawdown capacity is now 125 thousand barrels per day with permanent pumping equipment expected to be in place by September 1979. End of the year pumping capacity is projected to be 1 million barrels per day. The current SPR drawdown and distribution plan called the SPR Plan Amendment is expected to be completed within a few weeks.

DoD ACTION: DoD should be cognizant of the fact that the EPCA provided for a minimum storage of 150 million barrels of petroleum products as part of the SPR goal of 1 billion barrels. To date only crude has been stored.

DOE ACTION: Completion of the SPR Plan Amendment is first priority. Specific DOE actions under the Plan are unknown at this time.

Establish Natural Gas Curtailment Plans

PURPOSE: To provide that interstate gas supplies needed for certain essential agricultural and industrial uses generally will not be curtailed.

AUTHORITY: Natural Gas Policy Act (NGPA) of 1978 (P.L. 95-621) Title IV, Sections 401 and 402.

PROCEDURES: Since the early 1970's, demand for natural gas has exceeded supply in the interstate market, causing pipelines to curtail deliveries of gas to some of their customers. The Federal Energy Regulatory Commission (FERC) is responsible for reviewing a pipeline's curtailment plan, which is used to divide this reduced supply among its customers.

This section provides that the curtailment priority is applicable only if alternative fuels are not available.

For the purposes of this section, essential industrial process or feedstock use is defined as any use of natural gas in an industrial process or as a feedstock which the Secretary of Energy determines as essential.

DoD ACTION: DoD should be aware that curtailment plans exist and could be used if some essential defense related industrial process or feedstock use is adversely effected.

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Establish Natural Gas Curtailment Plans
(Con'd)

DOE ACTION: The Secretary of Energy shall present the rules under sections 401 and 402 pursuant to his authority under the DOE Organization Act to establish and review priorities for curtailment under the Natural Gas Act. The FERC will implement the rules prescribed to establish, review, and enforce curtailments under the act.

National Natural Gas Supply Emergency

PURPOSE: To declare natural national gas supply emergency to set in motion the mechanism for emergency allocation authority.

AUTHORITY: Natural Gas Policy Act of 1978 (PL 95-621) Title III Section 301.

PROCEDURES: The President may declare a natural gas supply emergency if he finds that:

- o A severe natural gas shortage endangers the supply of natural gas for high-priority uses, and
- o All other alternatives have been exhausted to assist in meeting natural gas requirements for such high-priority users.

DoD ACTIONS: If a severe gas shortage affects DoD, either regionally or nationally, DoD may request that the President declare a natural gas supply emergency which will allow emergency allocations to be authorized for high-priority users.

DOE ACTIONS:

Approve Emergency Natural Gas Import Applications

PURPOSE: To regulate the exportation and the importation of natural gas from foreign countries.

AUTHORITY: Natural Gas Act (P.L. 75-688) Section 3.

PROCEDURES: No person shall export or import any natural gas to or from any foreign country without first securing an order from the Economic Regulatory Administration (ERA) authorizing to do so. The ERA shall issue such application unless it finds that the proposed exportation or importation will not be consistent with the public interest.

DoD ACTION: DoD should be aware of this provision of the NGA for emergency planning.

DOE ACTION: The ERA will make emergency approvals to export or import natural gas when in the public interest to do so.

Allocate Emergency Natural Gas

PURPOSE: To assist in meeting the natural gas requirements for high-priority users during any natural gas supply emergency.

AUTHORITY: Natural Gas Policy Act of 1978 (P.L. 95-621) Section 303.

PROCEDURES: The President may order the allocation of natural gas to

- o Any interstate pipeline,

- o Any local distribution company, which is:

- served by any interstate pipeline,
 - providing natural gas only for high priority users, and
 - in need of deliveries of natural gas to assist in meeting natural gas requirements for high-priority uses.

- o any person for meeting requirements of high-priority uses of natural gas,

This authority is extended to cover the:

- o Allocation of certain boiler fuel gas,
- o Allocation of general pipeline supply, and
- o Allocation of user-owned gas.

DoD ACTION: DoD must show that

- o A shortage of natural gas supplies available exists or is imminent,
- o Such shortage or imminent shortage endangers the supply for DoD, and
- o The exercise of authority under state law where the shortage exists is inadequate to protect high-priority users.

Allocate Emergency Natural Gas
(Con'd)

If these condition are met, the DoD will notify the DOE of the conditions for supply shortfall relief.

DOE ACTION: DOE will evaluate the situation and make a determination whether emergency allocation authority is justified. DOE sends its recommendation to the President for approval.

APPENDIX B

DEFENSE ENERGY PROGRAM POLICY MEMORANDUM

(DEPPM) NO. 80-6



OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE

WASHINGTON, D.C. 20301

3 JUN 1980

MANPOWER
RESERVE AFFAIRS
AND LOGISTICS

Defense Energy Program Policy Memorandum (DEPPM) No. 80-6

MEMORANDUM FOR DESIGNATED ENERGY OFFICIALS OF THE OFFICE OF THE SECRETARY OF DEFENSE, MILITARY SERVICES, JOINT CHIEFS OF STAFF, AND DEFENSE AGENCIES

SUBJECT: Defense Energy Goals and Objectives

PURPOSE: This memorandum revises and extends Department of Defense (DoD) energy management goals and objectives to the year 2000.

BACKGROUND: Defense Energy Program Policy Memorandum (DEPPM) No. 78-2 of March 1, 1978, established energy management goals and objectives through 1985. The Department of Defense five year planning cycle now addresses fiscal years 1982-1986. To assure continued progress in energy supply and conservation, and the degree to which energy technology is supportive of each, a planning horizon beyond 1985 is required. The goals for 1985, 1990, 1995, and 2000 provide guidance against which to program resources and identify research and development requirements.

DISCUSSION: Defense energy goals and objectives have been developed both for installations and mobility operations. Within each of these categories, goals have been established in two broad areas: These are:

- Energy supply, and
- Energy conservation and efficiency.

A list of goals and the time frame for their accomplishment are contained in enclosure 1.

POLICY: Department of Defense policies are to become more energy efficient, reduce dependency on critical fuels, and increase the use of alternative energy resources while maintaining the training, readiness, and the combat capability of the strategic and tactical forces. To achieve those objectives, DoD will maintain a comprehensive energy management program, including the establishment and updating of energy goals. These goals will be used as guidelines to develop detailed plans and programs within the military departments that will allow the objectives to be met. Attainment of the goals is dependent directly upon budget support. Resource requirements to achieve these defense energy goals and objectives and resources programmed against these requirements shall be displayed in each yearly program objectives memoranda submitted to the Secretary of Defense. The format for this submittal is shown in enclosure 2.

--GJ/M
George Marienthal

Deputy Assistant Secretary of Defense
(Energy, Environment, and Safety)

Enclosures

DEPARTMENT OF DEFENSE
MOBILITY ENERGY GOALS

FY 1985

ENERGY SUPPLY

- Complete actions to assure access to petroleum supply through codification of priority allocation procedures, innovative acquisition policies, and secure crude streams.
- Decrease storage deficiencies 10 percent as compared to deficiencies which existed in FY 1980.
- Develop interim specifications for mobility fuels so that DOD will be able to use commercially available fuels (petroleum and non-petroleum derived).
- Obtain one percent of mobility energy from non-petroleum derived fuel and, as a part of this goal, increase the use of gasohol to 25 percent of unleaded gasoline usage.*
- Initiate development of conceptual designs for mobile systems not dependent on liquid hydrocarbons fuels.

ENERGY CONSERVATION AND EFFICIENCY

- A. Training and Operational Readiness
 - Limit the use of energy in mobility operations to the FY 1975 level of consumption.
 - Improve aggregate fuel efficiency of operational equipment (to include newly developed or replacement system) and develop internal sub-goals needed to achieve overall efficiency improvements. Develop and utilize methods to measure these energy efficiency improvements appropriate to the peculiarities of service/agency operations.
- B. General Transportation
 - Use electric and hybrid powered administrative vehicle.
 - Exceed the statutory mileage standards in fleet average fuel economy for administrative vehicles by four miles per gallon.
 - Insure that the procurement and acquisition of administrative vehicles meets or exceeds the statutory average fuel economy standard for the appropriate model year.
 - Reduce fuel consumption in administrative vehicles 15 percent below FY 1975 consumption level.

FY 1990

- Decrease petroleum storage deficiencies 50 percent as compared to deficiencies which existed in FY 1980.
- Complete fuel specifications for mobility fuels so that DOD will be able to use commercially available fuels (petroleum and non-petroleum derived).
- Obtain live percent of mobility energy from non-petroleum derived fuel sources and, as a part of this goal, increase the use of gasohol 50 percent of unleaded gasoline usage.*

A. Training and Operational Readiness

- Improve aggregate fuel efficiency in operational equipment (to include newly developed or replacement systems) of five percent as compared to FY 1975 levels and develop internal sub-goals to achieve this overall efficiency.

B. General Transportation

- Increase use of electric and hybrid powered administrative vehicles.
- Exceed the statutory mileage standards in fleet average fuel economy for administrative vehicles by four miles per gallon.
- Insure that the procurement and acquisition of administrative vehicles meets or exceeds the statutory average fuel economy standard for the appropriate model year.
- Reduce fuel consumption in administrative vehicles 20 percent below FY 1975 consumption level.

- Eliminate remaining petroleum storage deficiencies which existed in FY 1980.
- Obtain 10 percent of mobility energy from non-petroleum derived energy sources and, as a part of this goal, increase the use of Gasohol 75 percent of unleaded gasoline usage.*

A. Training and Operational Readiness

- Improve aggregated fuel efficiency in operational equipment (to include newly developed and replacement systems) of 10 percent as compared to FY 1975 levels and develop internal sub-goals to achieve this overall efficiency.
- B. General Transportation
 - Increase the use of electric and hybrid powered administrative vehicles.
 - Exceed the statutory mileage standards in fleet average fuel economy for administrative vehicles by four miles per gallon.
 - Insure that the procurement and acquisition of administrative vehicles meets or exceeds the statutory average fuel economy standard for the appropriate model year.
 - Maintain the 20 percent reduction of fuel consumption for administrative vehicles as compared to the FY 1975 consumption level.

FY 2000

- Obtain 20 percent of mobility energy from non-petroleum derived fuel sources and, as a part of this goal, increase the use of gasohol 100 percent *at unladed gasoline usage.*^a

A. Training and Operational Readiness

- Improve aggregated fuel efficiency in operational equipment (to include newly developed and replacement systems) of 15 percent as compared to FY 1975 levels and develop internal sub-goals to achieve this overall efficiency.

B. General Transportation

- Increase the use of electric and hybrid powered administrative vehicles.
- Exceed the statutory mileage standards in fleet average fuel economy for administrative vehicles by five miles per gallon.
- Insure that the procurement and acquisition of administrative vehicles meets or exceeds the statutory average fuel economy standard for the appropriate model year.
- Maintain the 20 percent reduction of fuel consumption level for administrative vehicles as compared to the FY 1975 consumption level.

^a It is anticipated that sufficient supplies of alcohol and non-petroleum derived fuel will be available.

DEPARTMENT OF DEFENSE
INSTALLATION ENERGY GOALS

FY 1985

ENERGY SUPPLY

A. Solid Fuel Conversion*

- Achieve a 30 percent reduction in the use of natural petroleum fuels from 1975 baseline levels.

- Obtain 10 percent of total installation energy from coal (includes solid coal, coal liquids, and coal gas), municipal solid wastes, refuse derived fuels, and wood.

B. Alternative Energy Sources*

- Obtain 1 percent of total installation geothermal and renewable energy sources using the following technology applications:

- geothermal heating and electric,
- low head hydropower,
- solar heating and cooling,
- solar electric,
- biomass (municipal solid wastes, refuse derived fuels, and wood),
- wind, and
- ocean thermal

ENERGY CONSERVATION AND EFFICIENCY

- Achieve a 20 percent reduction in energy usage in existing buildings per gross square foot of like use from 1975 baseline.
- Achieve a 45 percent reduction in energy usage for new buildings per gross square foot of like use from 1975 baseline.
- Energy reductions for industrial or production operations, training, R&D, etc. should be expressed in terms of increased energy efficiency per unit of production or other appropriate productivity measure. Each service/agency should develop and utilize methods to measure energy efficiency improvements appropriate to the peculiarities of service/agency operations.
- Comply with the yearly retrofit requirements of the National Energy Conservation Policy Act (NECPA).

FY 1990

A. Solid Fuel Conversion*

- Achieve a 35 percent reduction in the use of natural petroleum fuels from 1975 baseline levels primarily through solid fuel conversions and the use of alternative energy sources.

- Obtain 15 percent of total installation energy from coal (includes solid coal, coal liquids, and coal gas), municipal solid wastes, fuels, and wood.

B. Alternative Energy Sources*

- Obtain 5 percent of total installation energy from geothermal and renewable energy sources using technologies listed in same category for FY 1985.

- Achieve an overall 25 percent reduction in energy usage per gross square foot of like use from 1975 baseline.
- Retrofit all buildings for which energy audits have been performed to achieve the goals set forth in NECPA.

- Energy reductions for industrial or production operations, training, R&D, etc. should be expressed in terms of increased energy efficiency per unit of production or other appropriate productivity measure. Each service/agency should continue to utilize methods to measure energy efficiency improvements appropriate to the peculiarities of service/agency operations.
- Additional goals to be determined based upon FY 1985 achievements and developed efficiency indicators.

FY 1995

- A. Solid Fuel Conversion*
 - Achieve a 40 percent reduction in the use of natural petroleum fuels from 1975 baseline levels primarily through solid fuel conversions and the use of alternative energy sources.
 - Obtain 20 percent of total installation energy from coal (includes solid coal, coal liquids, and coal gas), municipal solid wastes, refuse derived fuel, and wood.
- B. Alternative Energy Sources *
 - Obtain 10 percent of total installation energy from geothermal and renewable energy sources sources technologies listed in same category for FY 1985.

FY 2000

A. Solid Fuel Conversion*

- Achieve a 45 percent reduction in the use of natural petroleum fuels from 1975 baseline levels primarily through solid fuel conversions and the use of alternative energy sources.
- Obtain 35 percent of total installation energy from coal (includes solid coal, coal liquids, and coal gas), municipal solid wastes, refuse derived fuel, and wood.

B. Alternative Energy Sources*

- Obtain 20 percent of total installation energy from geothermal and renewable energy sources using the technologies listed in same category for FY 1985.

*Biomass consumption can be applied to either the solid fuel conversion or the alternative energy source goals. Double counting is not permitted. Each DOD component may decide how to apportion its total biomass consumption between the goals.

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OTHER ENERGY PROGRAMS
(\$000)

FY 82 - - - - - FY 86

A. ECAM

1. Requirement¹
2. POM Funding

B. EEP

1. Requirement¹
2. POM Funding

C. Solar/Renewable/Geothermal

1. Requirement¹
2. POM Funding

D. Solid Fuel (Coal, Wood, RDF)

1. Requirement¹
2. POM Funding

E. Synfuels (shale, coal, tar sands, and biomass (includes alcohol))

1. Requirement¹
2. POM Funding

F. Energy Technology Demonstration

1. Requirement¹
2. POM Funding

¹ Funding requirement to implement energy programs (excluding ECIP) which Executive Order 12003, PL 95-619, and Defense Energy Program Policy Memoranda direct.

APPENDIX C

Energy Policy Documents

Index

DODD 4140.25	Management of Bulk Petroleum Products, Storage, and Distribution Facilities, May 15, 1980
DOD 4140.25-M	Procedures for the Management of Petroleum Products, December 20, 1978
DODD 4170.10	Energy Conservation, March 29, 1979
DODI 4220.5	Petroleum Products Imports, June 22, 1979
DODI 4220.6	Control of Petroleum During an Emergency, September 12, 1963
DODD 5126.46	Defense Energy Information System, April 25, 1978
DOD 5126.46-M	Defense Energy Information System, May 12, 1978
DODI 7730.21	Petroleum Reporting Requirements, June 19, 1968
DEPPM 78-2	Defense Energy Goals and Objectives, March 1, 1978
DEPPM 78-4	Department of Defense Energy Awareness Program, June 28, 1978
DEPPM 78-5	Defense Photovoltaic Program Office Charter, July 13, 1979
DEPPM 78-6	Assignment of Lead Service Responsibilities for Energy Technologies, October 2, 1978
DEPPM 78-7	Energy Conservation -- Transportation, December 15, 1978
DEPPM 78-8	Department of Defense -- Department of Energy Memorandum of Understanding, December 15, 1978
DEPPM 79-2	Department of Defense (DOD) Personnel Use of Self-Service Retail Service Stations, January 29, 1979
DEPPM 79-3	Defense Energy Management Plan (DEMP), April 13, 1979
DEPPM 79-4	Department of Defense Energy Conservation Baselines, April 30, 1979
DEPPM 79-5	1979 Defense Energy Management Priority No. 1 Fuel Supply Assurance, April 27, 1979
DEPPM 79-6	DOD Annual Energy Program Management Reviews, April 27, 1979
DEPPM 79-7	Action Items from the 1979 Defense Energy Program Management Review, June 20, 1979
DEPPM 79-8	Department of Defense Fuel Support to the United States Secret Service, June 18, 1979
DEPPM 79-9	Use of Department of Defense (DoD) Fuel Stocks to Support Non-DoD Consumers, August 8, 1979
DEPPM 79-10	Emergency Building Temperature Hot Water Restrictions, September 20, 1979
DEPPM 80-1	Defense Energy Management Priorities for 1980, December 12, 1979
DEPPM 80-2	Procedures for Reports of Temperature Violations, December 7, 1979

DEPPM 80-4 Use of Domestically Produced Alcohol and/or Gasohol
 as a Fuel for Motor Vehicles, February 11, 1980
DEPPM 80-5 Defense Short-Term Energy Data Reporting Improvement
 Program, April 8, 1980
DEPPM 80-6 Defense Energy Goals and Objectives, June 3, 1980

APPENDIX D

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